

# The Mining Journal

## RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 693.—Vol. XVIII.

LONDON, SATURDAY, DECEMBER 2, 1848.

[PRICE 6D.]

Stannaries of Cornwall—In the Vice-Chancellor's Court.  
DAVEY AND ANOTHER v. TYLE.

IN RE WHEAL UNION MINE.

NOTICE IS HEREBY GIVEN, that, PURSUANT to an ORDER, or DECREE, made in this cause, and bearing date the 14th day of November inst., a PUBLIC AUCTION will be HELD at ANDREW'S HOTEL, RED-RUTH, on Thursday, the 14th day of December next, at Three o'clock in the afternoon, for SELLING, in such lots as shall be then and there determined on, TWO (2) PARTS, or SHARES, of the said defendant, and in the said mine; and the LIKE PARTS, or SHARES, of and in the ORES, HALVANS, MACHINERY, and MATERIALS, and OTHER EFFECTS upon and belonging to the said mine.

For further information, application may be made to Mr. Stokes, solicitor, Truro.

Dated Registrar's Office, Truro, Nov. 25, 1848.

**GREAT HEWAS CONSOLS MINE, near ST. AUSTELL, CORNWALL.**—TO BE SOLD, BY PUBLIC AUCTION, at the RED LION HOTEL, TRURO, on Wednesday, the 8th day of December next, at One o'clock in the afternoon (unless previously disposed of by private contract, of which due notice will be given), from FORTY to ONE HUNDRED and NINETY (of 196ths) SHARES, or the ENTIRETY, as may be then and there determined, of the MINE, with the MATERIALS, TINSTUFF, and LEAVINGS thereto belonging.

The mine is forked only to the 44 fathom level; and, notwithstanding the recent very low price of tin, has been, even at that level, nearly paying her cost for many months past; and, with the important discoveries lately made at the adit and shallow levels, the vast extent of tribute tin ground already seen in the levels, not yet cleared for working, and the rise in the price of tin, there can be no doubt of this mine becoming a most profitable investment, and that with a very little further outlay.

There is an engine, of 66-inch cylinder, at work, which is sufficiently powerful to drain the mine 100 fathoms deeper, or 30 fathoms below the present bottom level.

Water-wheels are erected, capable of working from 60 to 70 heads of stamps; the pit-work, &c., is new, and the whole plant of materials suitable for carrying out the mine on an extensive scale.

A large proportion of the present adventurers are of the highest respectability, and the course thus adopted is not from an unwillingness on their part to carry out the mine, but from a cause quite unconnected with themselves, and to which they very reluctantly submit—satisfactory proofs of which will be given at the time of sale.

The sale will be free of every liability beyond the purchase; and to capitalists, or to a few persons who might wish to join in a safe undertaking, an opportunity is thus afforded but rarely to be met with.

Further particulars may be known on application to Richard Pearce, Esq., Penzance; the agents on the mine; or to Mr. William Browne, auctioneer, Charlestown, St. Austell, Cornwall.—Charlestown, Nov. 27, 1848.

**TO BE SOLD, OR LET ON ROYALTY, the DARLSTON GREEN COLLIERY AND IRONSTONE MINES.**

In the district of SOUTH STAFFORDSHIRE, now working by the "Galvanised Iron Company."

These MINES comprise about 26 acres, held under lease, of which about 23 years are unexpired. They contain all the measures of IRONSTONE usually found in that locality—the excellence of the quality of which is well known, and a small portion of the New Mine Coal, the greater portion of which has been worked. The mines have recently been opened, and drained at a considerable expense, and are now in complete working order. There are a sufficient number of shafts sunk on the estate to get the whole of the mines; and a very trifling outlay will open the measures of ironstone which are not now at work.

The PUMPING and WINDING-ENGINES are perfectly EFFECTIVE, and all the PLANT in EXCELLENT REPAIR. The Birmingham Canal runs into the estate, and there is abundant demand for the produce of these mines at the surrounding iron-works.

For further particulars, apply at the office of the Galvanised Iron Company, 3, Mansion-house-place, London; or to Mr. Taylor, King Hill-field, Darlaston.

**TO BE SOLD, OR LET ON LEASE (FREEHOLD), the PHENIX IRON-WORKS, WEST BROMWICH.**

In the district of SOUTH STAFFORDSHIRE, at present carried on by the "Galvanised Iron Company."

These WORKS, which are amongst the most eligible and complete in the district, comprise the following MILLS and FORGES—viz.:

1. An ENGINE, of 100-horse power, by Boulton and Watt, in brick engine-house, with two 25-foot boilers, and all the requisite machinery, of the best description, recently erected, driving a forge; a 20-inch BOILER-PLATE TRAIN, and a RAIL MILL—appended to which is a small ENGINE, of 10-horse power, with two PUNCHING and STRAIGHTENING MACHINES for RAILS—complete.

2. An ENGINE, of 60-horse power, by J. and G. Davis, in brick engine-house, with three 22-foot boilers, with powerful machinery, driving a forge; an 18-inch MILL-PLATE and SHEET MILL; and a 16-inch TRAIN for the manufacture of Bars, 7½ Iron, and Anglo Iron. Attached to this work, is an ENGINE, of 20-horse power, on cast-iron frame, driving a small 8-inch MERCHANT TRAIN, SAW, and TURNING-LATHIE.

With these Mills and Forges are 34 PUDDLING and HEATING FURNACES—the whole standing on about two acres of freehold land, bounded by the main road on one side, and by the Birmingham Canal on the other, on which are the necessary wharves for the use of the works.

The capacity of the works is equal to about 350 to 400 tons of finished iron weekly.

Adjoining the works, on a separate tenure, are a MANAGER'S HOUSE, with about FIVE ACRES of LAND, and FOUR WORKMEN'S HOUSES.

There is an extensive assortment of BOLLS, for the manufacture of the various descriptions of iron for which these works have been long known, and for which there is an extensive and established connection—the whole forming a most complete and valuable establishment for the supply of manufactured iron in all its branches.

For further particulars, apply either at the offices of the Galvanised Iron Company, 3, Mansion-house-place, London; or to Mr. Spencer, on the premises.

**EXTENSIVE AND VALUABLE MINERAL PROPERTY AND IRON-WORKS FOR SALE.—TO BE SOLD, BY PRIVATE CONTRACT.**

**THE VENALL COAL AND IRON-WORKS.**

Situate on the south side of the RIVER NEATH, GLAMORGANSHIRE, about 8 miles from the port of Neath, and 14 from the port of Swansea, with all the necessary appendages for carrying on the smelting of iron, and an extensive shipping trade of stone coal and stone coal cullm.

The property comprises long leases of coal and ironstone, extending over about 3000 acres of land, in a ring fence, which are taken on favourable terms. The coal is anthracite, and three veins, of an aggregate thickness of about 25 feet, are effectually opened by level, for the supply of 100 to 200 tons per day.

The ironstone veins are abundant and rich, and sufficiently opened by level to yield an ample supply for three furnaces. There is also valuable black-band, extending over a large acreage.

The works consist of an engine-house for a pair of engines, one 50-horse high-pressure blowing engine, two blast-furnaces, with all the necessary hot-blast stoves, casting-houses, foundry, &c.

The works and colliery are in operation, and any person who may be desirous of purchasing, will be treated with on liberal terms.

Reports recently made on the property, by Messrs. John Southan, of Bliston, and W. P. Struvé, of Swansea, may be seen, on application to Messrs. Jervons and Wood, Neath; Messrs. Llewellyn and Randall, solicitors, Neath; or to Messrs. Rowland, Hacon, and Rowland, solicitors, 38, Threadneedle-street, London.

**COAL.—TO BE SOLD, OR LET, a valuable COAL MINE**

the property of Sir Thomas G. Hesket, Bart., situate about five miles from the important manufacturing town of BLACKBURN, in the township of Great Harwood, in the county of Lancashire. The mine has been recently proved, and found, at 77 yards from the surface, to be 5 feet in thickness, and of excellent quality. It is commonly called, or known by the name of, the UPPER MOUNTAIN MINE, and extends over about 1000 statute acres, which will be divided into suitable lots.

A section of the borings may be seen by applying to Mr. Boscoe, Rufford Hall, Ormskirk; or to Mr. Whittle, coal viewer, Charnock Richard, Chorley—to either of whom proposals may be sent.

**ASSAYING AND ANALYSIS.**—Mr. MITCHELL begs to inform the MANAGERS, &c., of MINES, SMELTING-WORKS, and MANUFACTORIES, that he still continues to CONDUCT ASSAYS and ANALYSES of all PRODUCTS, metallurgical and manufacturing, at his LABORATORY.

23, HAWLEY-ROAD, KENTISH TOWN, LONDON, to which address communications are to be forwarded.—Instruction in all branches of assaying and analysis as usual.

**THE PATENT SAFETY FUSE.**

FOR BLASTING ROCKS IN MINES, QUARRIES, AND FOR SUBMARINE OPERATIONS.—This article affords the SAFEST, CHEAPEST, and MOST EXPEDIENT MODE of effecting this very hazardous operation. From many testimonies to its usefulness with which the manufacturers have been favoured from every part of the kingdom, they select the following letter, recently received from John Taylor, Esq., F.R.S., &c.:—"I am very glad to hear that my recommendations have been of any service to you; they have been given from a thorough conviction of the great usefulness of the Safety Fuse; and I am quite willing that you should employ my name as evidence of this."

Manufactured and sold by the Patentees, BICKFORD, SMITH, and DAVEY, Camberne, Cornwall.

**PATENT SAFETY FUSE.**—Mr. WILLIAM R. BANT

would direct the attention of MINING COMPANIES and OTHERS to the FACT of his OWNING a PATENT for the MANUFACTURE of SAFETY FUSE in Spain, and that he will be happy to attend to any communications which may be addressed to him for the SUPPLY thereof.

No. 74, Calle de San Miguel, Carthagena, Nov. 4, 1848.

Contract for Pig-Iron.

DEPARTMENT OF THE STOREKEEPER GENERAL OF THE NAVY.  
Somerset-place, 23d November, 1848.

**THE COMMISSIONERS FOR EXECUTING THE OFFICE** of LORD HIGH ADMIRAL of the UNITED KINGDOM OF GREAT BRITAIN AND IRELAND, do hereby give Notice, that, on Thursday, the 7th Dec. next, at One o'clock, they will be ready to treat with such persons as may be willing to CONTRACT for SUPPLYING her Majesty's Dockyard, at Portsmouth, with

SIXTY TONS OF SOFT MELTING PIG-IRON (Scotch Clyde).

A form of the tender may be seen at the said office. No tender will be received after One o'clock on the day of treaty, nor any noticed, unless the party attends, or an agent for him, duly authorised in writing.

Every tender must be addressed to the Secretary of the Admiralty, and bear in the left-hand corner the words "Tender for Pig-Iron," and must also be delivered at Somerset-place, accompanied by a letter, signed by a responsible person, engaging to become bound with the person tendering, in the sum of £100, for the due performance of the contract.

Full Corporation Water-Works.

**TO STEAM-ENGINE MANUFACTURERS.**—The MAYOR,

ALDERMEN, and BURGESSES of the Borough of KINGSTON-UPON-HULL, are ready to RECEIVE TENDERS for the MANUFACTURE, ERECTION, and SETTING TO WORK of an EXPANSIVE CONDENSING PUMPING-ENGINE, PLUNGER POLE, TUBULAR BOILERS, &c., to be ERECTED upon their WATER-WORKS, at STONE-FERRY, near HULL.—The specification and a drawing (describing the sizes and general arrangement of the engine and boiler-houses), signed by Thomas Wicksteed, consulting engineer, may be seen at the Resident Engineer's Office, Water-Works, Hull, on any day from the 1st to the 29th of December, 1848 (Sundays excepted), between the hours of 10 A.M. and 4 P.M.

Tenders, drawings, &c., according to the terms of the specification, are to be delivered on or before the 29th Dec., 1848, at Eleven o'clock in the forenoon, sealed and addressed to Thomas Thompson, Esq., Town Clerk, Hull, and labelled outside, "Tender for Contract, No. 1," and the contractor's name, and the detailed estimate and schedule of prices, shall be delivered at the same time, sealed and addressed to Thomas Wicksteed, Esq., Consulting Engineer, with the name of the contractor written on the outside, to be sent under cover to the Town Clerk.

The corporation do not bind themselves to accept the lowest tender.

Hull, Nov., 1848. (Signed) THOMAS THOMPSON, Town Clerk.

**STEAM TO INDIA AND CHINA, via EGYPT.**—Regular

MONTHLY MAIL (steam conveyance) for PASSENGERS and LIGHT GOODS TO CEYLON, MADRAS, CALCUTTA, PENANG, SINGAPORE, and HONG-KONG.

THE PENINSULAR AND ORIENTAL STEAM NAVIGATION COMPANY BOOK PASSENGERS and RECEIVE GOODS and PARCELS for the ABOVE PORTS by their steamers—starting from Southampton on the 20th of every month; and from Suez on or about the 10th of the month.

BOMBAY.—Passengers for Bombay can proceed by this company's steamers of the 29th of the month, to Malta, thence to Alexandria by her Majesty's steamers, and from Suez by the Honourable East India Company's steamers.

MEDITERRANEAN.—Malta.—On the 20th and 29th of every month. CONSTANTINOPLE.—On the 29th of the month. ALEXANDRIA.—On the 20th of the month.

SPAIN AND PORTUGAL.—Vigo, Oporto, Lisbon, Cadiz, and Gibraltar, on the 7th, 17th, and 27th of the month.

For plans of the vessels, rates of passage-money, and to secure passages, and ship cargo apply at the company's offices, No. 123, Leadenhall-street, London; and 57, High-street, Southampton.

**NOTICE TO SHIPPERS OF GOODS AND PARCELS.**

per PENINSULAR AND ORIENTAL STEAM NAVIGATION COMPANY'S STEAMERS, TO INDIA AND CHINA.—GOODS and PARCELS sent direct to the company's parcel office, on or before 5 P.M. on the 17th of each month, are forwarded at less cost to shippers than when sent through any intermediate channel. Cases must not exceed 112 lbs. weight each, for Aden, Ceylon, Madras, Calcutta, and China; and 40 lbs. each case for Bombay. No package for India or China can, under any circumstances, be shipped at Southampton, unless it be cleared through the Custom-house, and placed alongside the steamer by noon on the 10th of each month.

Detailed particulars can be obtained on personal application, or by writing. Parcel Department, 123, Leadenhall-street.

**ECONOMICAL STEAM-ENGINE.**—surpassing the Cornish.

—CRADDOCK'S PATENT DOUBLE CYLINDER HIGH-PRESSURE EXPANSIVE AND CONDENSING ENGINE, adapted for MARINE, LOCOMOTIVE, and STATIONARY PURPOSES.

BOILER.—Tubular, from iron deposit, and perfectly safe from explosion.

ENGINE.—Not half the weight or bulk of ordinary engines.

FUEL.—Under 3 lbs. of coal per horse-power per hour.

WATER.—Under 1 gallon per horse-power per day of 10 hours, for all purposes, with air as the medium of condensation.

These engines are erected at a comparatively trifling expense, and are easily worked.

FOR SALE.

TWO 40-horse power ENGINES, suited to CONDENSE either by air or water.

TWO 30-horse ditto ditto ditto ditto.

ONE 10-horse ditto ditto ditto ditto.

N.B.—The 10-horse is adapted to drive, warm, and ventilate a factory.

A PAIR OF OSCILLATING MARINE ENGINES, of 10-horse power.

PRICE.—The patentees are desirous of placing some of their engines in good hands, and would accept an extremely low price from respectable parties for the above engines.

The above invention has been known through the scientific press since the date of the first patent, in 1840, since which much thought and capital have been employed in simplifying the practical details. It is now a most simple, efficient, and economical invention, as the engines above offered for sale will practically demonstrate.

For a clear elucidation of the principles, economy, and practical details of this invention, see *Cradock's Lectures on the Steam-Engine*, &c., sold by Simpkin, Marshall, & Co., London, and all booksellers (price 7s. 6d., including 10 drawings).—See also *Mining Journal*, Sept. 18, 1847; *Mechanics Magazine*, Nos. 1251 to 1254, and 1258; *Midland Counties Herald*, Sept. 30, 1847; *Railway Gazette*, Oct. 2, 1847; *Manchester and Salford Advertiser*, Oct. 2, 1847; *Nautical Standard*, Nov. 30, 1847; *Literary Gazette*, Jan. 8, 1848; *Practical Mechanics Journal*, of May, June, and August, 1848.

Apply to Thomas Craddock and Co., 16 and 38, Broad-street, Birmingham, where engines on the above principle may be seen at work.

Also ON SALE, THREE 4-horse high-pressure ENGINES—simply arranged a 1d got up.—Price, £12 per horse-power.

**FOURDRINIER'S PATENT SAFETY APPARATUS, for**

PREVENTING ACCIDENTS IN MINES AND OTHER PLACES, WHEN THE ROPE OR CHAIN BREAKS.

By the ADOPTION of this INVENTION the LIVES of the WORKING MINERS may be PRESERVED, and the PROPERTY of the MINE OWNERS PROTECTED from the serious consequences of either of the following accidents—viz.:

1. From the men, or the load, being precipitated to the bottom of the shaft when the rope or chain breaks: in this case the apparatus is self-acting.

2. From either the men, or load, being drawn over the pulley: in this case, also, the apparatus is self-acting.

3. From the fearful consequences to men or load of a "whirl," or run: in this case the result is equally certain.

A COAL PIT, with the SAFETY APPARATUS ATTACHED to the CAGE, is daily at WORK near BURLEIGH, in the STAFFORDSHIRE POTTERIES.

To inspect the apparatus, or to obtain any further information, application may be made to Mr. Edward N. Fourdrinier (the patentee), Cheddington, near Leek, Staffordshire; or to Mr. Joseph Fourdrinier, 9, College-place, Camden Town, London—who are prepared to GRANT LICENSES for the USE of the PATENT.

**PLANTAGENET GUARD RAZOR.—140, STRAND.**

RAZORS FOR THE NOBILITY AND GENTRY.

RAZORS FOR THE ARMY AND NAVY.

RAZORS FOR THE UNIVERSITIES.

RAZORS FOR THE CLERGY.

RAZORS FOR THE BAR AND LEGAL PROFESSION.

RAZORS FOR THE MEDICAL PROFESSION.

RAZORS FOR THE MERCHANT AND EARLY RISER.

RAZORS FOR THE BLIND.

RAZORS FOR THE NERVOUS AND SICK.

RAZORS FOR THE TRAVELLER.

Fitted with a Patent Movable Guard, rendering the operation of shaving a perfect luxury, and preventing the possibility of cutting the skin.

The most nervous man can shave himself in bed in the dark, or in a railway carriage, or on board a steam-boat, without a glass, and not cut himself, with the

Patent Plantagenet Guard Razor,

Price..... 6s.—Best Ivory Handles..... 8s.

Guard Razors are fitted for right-hand shaving exclusively, and others for left-hand shaving exclusively.

The Razor and Guard will be forwarded free to any part of Great Britain or Ireland, upon receipt of the price of the article required, by Post-office order (made payable to C. Stewart and Co.) with 8d. extra for carriage.

Every Razor and Guard is stamped with the patentees' signature, "C. STEWART and Co.," to imitate which is forgery.—A liberal discount allowed to the trade and to captains of vessels, shipping and country agents.

**TO COLLIERY OWNERS.**—A GENTLEMAN, of 25 years' experience in the active management of a colliery, is OPEN to an ENGAGEMENT. He is thoroughly acquainted with engine-making, shaft-sinking, pump-work, and coal-getting, and can bring very high testimonials of his sound practical skill as a mining engineer.—Address to "Z," care of E. W. Binney, solicitor, 40, Cross-street, Manchester.

**WANTED, TWO STEAM-ENGINES**—one of about 18-horse power, and the other 40-horse power.—Address, stating full particulars, with price, and where to be seen, to Mr. J. Belcher, 14, Farnival's Inn, Holborn, London.

**A SECOND-HAND CONDENSING STEAM-ENGINE** ON SALE. Will be sold cheap.—Apply to Mr. S. Mills, broker, Sunderland.

**MINERAL PROPERTIES AND ESTATES.**—

Mr. HENRY ENGLISH begs to intimate to the PROPRIETORS of MINES and MINERAL PROPERTIES, as also to ADVENTURERS in MINES, that REPORTS and SURVEYS, with PLANS and SECTIONS, illustrative thereof, will be FURNISHED by him, being aided by agents in the various mining localities, of undoubted practical knowledge and experience. Information or advice rendered on all points touching mining pursuits, which Mr. H. English feels himself competent to afford, as the result of his personal investigation and inquiries during several years of his connection with the several mining districts.—Estimates given for exploring or proving mining ground, as also the machinery requisite, with drawings.

OFFICES—No. 25, FLEET-STREET, LONDON.

**MINING INVESTMENT.**—Mr. R. THOMAS, of No. 8,

GEORGE-YARD, LOMBARD-STREET, LONDON (who has had upwards of 20 years' experience as a mining agent in London), having made arrangements to resume PURCHASING and SELLING MINE and OTHER SHARES ON COMMISSION, begs to OFFER his SERVICES to his FRIENDS, CAPITALISTS, and OTHERS, in the TRANSACTION of such BUSINESS. The unprecedented low price of mine shares renders the present a most favourable period for investment, with the prospect of large returns.—The fullest information (without charge) will be given relative to mining operations and investments; and a survey, or inspection, if required, of any mining property will be made by a competent party, on moderate terms.

**MINING OFFICES.—ESTABLISHED FIVE YEARS.**—

THOMAS P. THOMAS begs to inform his friends and the public, that he has REMOVED from No. 18, Threadneedle-street, to No. 3, GEORGE-YARD, LOMBARD-STREET, LONDON (late Messrs. Phillips and Tiplady's).

N.B.—Dealer in English and Foreign Funds, Mining, Railway, Gas, and other shares.

**MINING OFFICES, THREE KING'S COURT, LOMBARD**

STREET, LONDON.—Messrs. H. TREDINICK & CO. beg to draw the attention of capitalists to the DEPRESSED MARKET VALUE of SHARES in ENGLISH and FOREIGN MINES, many of which pay dividends of from 20 to 30 per cent. per annum, whilst those on the eve of so doing are selling at corresponding low prices.—Messrs. T. & Co. continue to DEAL in every description of MINING, RAILWAY, BANKING, INSURANCE, CANAL, and OTHER SHARES.—Statistical information afforded gratuitously, upon personal application.—MONEY ADVANCED upon the above securities.

**MR. C. S. RICHARDSON, CIVIL ENGINEER, LAND**

AND MINING SURVEYOR,

5, WHITEFRIARS-STREET, LONDON.

**JAMES LANE, MINING SHARE DEALER,**

80, OLD BROAD-STREET, LONDON.

**MONEY.**—MESSRS. KILICK & CO. (late WINSTANLEY, KILICK & Co.), SHAREBROKERS, inform their friends and the public, that they make IMMEDIATE ADVANCES, to any amount, on the deposit of English and Foreign Railway Shares, Scrip, and Debentures, upon exceedingly advantageous terms: they also BUY and SELL every description of STOCK and MINING SHARES, at much less commission than usually charged.—6, Bank Chambers, opposite Bank of England.

**AUSTRALIAN MINING COMPANY.**—The board of direc-

tors hereby give Notice, that an EXTRAORDINARY GENERAL MEETING of the shareholders in this company will be HELD at the company's offices on Monday, the 11th day of December next, at Twelve o'clock precisely, to receive the directors' report on the present condition and future prospects of the company; at which meeting, also, a motion will be made for admitting votes by proxy at general meetings of the shareholders—whether the form of proxy to be which is prescribed by clause No. 35 of the company's Deed of Settlement, and which being an authority (until revoked) to vote at meetings generally, requires a stamp duty of 30s. (thirty shillings), or such as to limit the authority to a particular meeting, or any adjournment thereof, which latter form of proxy requires only a stamp duty of 2s. 6d. By order of the board, 1, Adelphi-place, Nov. 23, 1848. J. A. JOSEPH, Secretary.

**BEDFORD UNITED MINES.**—Notice is hereby given, that

a MEETING of the adventurers of this mine will be HELD at No. 50, Threadneedle-street, on Thursday, the 14th December next, at One o'clock precisely, on the general business of the company. By order of the committee of management, Nov. 24, 1848. G. KIECKHOFFER, Secretary.

**GADAI MINING COMPANY.**—At an Adjourned Meeting

of adventurers in the Gadai Mine, held at the Queen's Arms Hotel, Cheap-side, on Thursday, the 30th November, it was resolved unanimously.—That the MEETING be FURTHER ADJOURNED until the 14th Dec., at the same time and place.

Dec. 1, 1848. H. ENGLISH, Hon. Purser.

**ST. JOHN DEL REY MINING COMPANY.**—Notice is

hereby given, that the THIRTIETH HALF-YEARLY DIVIDEND, being SEVENTEEN SHILLINGS and SIXPENCE per share on the shares of this company, will be PAYABLE at this office on Saturday, the 9th December next, and every succeeding day, between the hours of Ten and Four. Forms for claiming the dividend may be obtained at the company's offices, and must be left three clear days for examination previous to payment.

8, Tokenhouse-yard, November, 1848.

**CAMERON'S COALBROOK STEAM COAL & SWANSEA**

AND LOUGHBOROUGH RAILWAY COMPANY.

Registered and Incorporated.

Whereas an Extraordinary General Meeting of the shareholders of this company was held in the company's offices here, on Wednesday, the 15th day of Nov. inst., and the same was adjourned to Friday, the 18th day of December next.

Notice is hereby given, that the said ADJOURNED EXTRAORDINARY GENERAL MEETING of the shareholders of this company will be HELD in the company's offices here, on Friday, the said 18th day of December next, at One o'clock in the afternoon precisely, for the purpose of considering the report of the committee of shareholders, appointed at the General Meeting on the 28th of July last, and of disposing thereof, and of dissolving the said committee. Also, for the purpose of considering, amending, altering, or repealing certain rules, regulations, and provisions of the Deed of Settlement, regulating and incorporating the company, to be then submitted to the meeting, and of entering into such resolutions thereon as may be necessary for carrying the same into effect.

By order of the board of directors, A. C. HOWDEN, Sec.

Company's offices, 2, Moorgate-street, London, Nov. 27, 1848.

**KENT AND SUSSEX**

**INDURATED AND IMPERVIOUS STONE COMPANY.**

[LICENSED UNDER HUTCHINSON'S PATENTS.]

Capital—£20,000, in 2000 shares, of £10 each.

[Provisionally Registered, pursuant to the Act 7 and 8 Victoria, cap. 110.]

First call £2 10s. per share, on complete registration.—No further call to exceed £2 10s. per share at one time, with three months' previous notice.

ONLY ONE-HALF THE CAPITAL WILL BE REQUIRED FOR FIRST YEAR'S OPERATIONS.

**PROSPECTUS.**

The object of the promoters of this undertaking is, to raise capital to purchase and to carry out established works, on an extended scale, the advantage of which consists of their being held on long lease, and situated close to Calverley Quarry, with an inexhaustible supply of soft sandstone, water, and fuel on the spot, with railway communication adjoining, for transmission of the company's produce to the metropolitan and other markets.

Capitalists will find this investment to be free from mystification—



## Proceedings of Public Companies.

## MEETINGS DURING THE ENSUING WEEK.

MONDAY.....General Mining Company for Ireland—offices, at Eleven.  
TUESDAY.....Grand Junction Canal Company—Crown and Anchor, Strand, Eleven.  
WEDNESDAY.....Regent's Canal Company—offices, at One.  
THURSDAY.....Equitable Assurance Company—offices, at Eleven.  
Mines Royal Company—offices, at Twelve.  
Waterloo Bridge Company—Freemason's Tavern, at One.  
London and County Bank—London Tavern, at One.

[The meetings of Mining Companies are inserted among the Mining Intelligence.]

## Transactions of Scientific Bodies.

## MEETINGS DURING THE ENSUING WEEK.

TUESDAY.....Asiatic—5, New Burlington-street..... 2 P.M.  
MONDAY.....Entomological—17, Old Bond-street..... 8 P.M.  
British Architects—16, Grosvenor-street..... 8 P.M.  
Chemical—Society of Arts, Adelphi..... 8 P.M.  
Medical—Society of Arts, Adelphi..... 8 P.M.  
Pathological—21, Regent-street, Waterloo-place..... 8 P.M.  
TUESDAY.....Linnean—Soho-square..... 8 P.M.  
Horticultural—21, Regent-street..... 3 P.M.  
WEDNESDAY.....Society of Arts—Adelphi..... 8 P.M.  
THURSDAY.....Royal—Somerset-house..... 8 P.M.  
Antiquaries—Somerset-house..... 8 P.M.  
Zoological—11, Hanover-square..... 3 P.M.  
FRIDAY.....Astronomical—Somerset-house..... 8 P.M.  
SATURDAY.....Royal Botanic—Inner Circle, Regent's Park..... 8 P.M.  
Westminster Medical—17, Saville-row..... 8 P.M.

## THE ROYAL SOCIETY.

## RESIGNATION OF THE MARQUESS OF NORTHAMPTON AS PRESIDENT.

The anniversary meeting of the Royal Society took place on Thursday afternoon, at the apartments of the society, at Somerset-house. There was a very numerous attendance, caused by the retirement of the Marquis of Northampton, who has filled the presidential chair since November, 1838, when he succeeded to that honourable distinction on the retirement of his late Royal Highness the Duke of Sussex; and also the retirement of the respected secretary, Dr. Peter Mark Roget, who has discharged the functions of his office in the council for a period of 20 years.

At two o'clock the Fellows began to congregate, the noble president being among the earliest arrivals; and the Earl of Rosse, who was proposed as the noble marquis's successor, was also present. The royal gold medals were awarded by the president to the authors of successful scientific papers, as also the gold Copley medal.

The Marquis of Northampton delivered a short and feeling address to the Fellows on his retirement from the proud position he had held in the society since 1838. A unanimous vote of thanks was voted to his lordship; and the Earl of Rosse was elected president without opposition. A vote of thanks was passed to Dr. P. M. Roget.

There was a contest for the vacancy occasioned by Dr. Roget's retirement, the candidates being Mr. Thomas Bell and Mr. William Robert Grove, M.A.; and the result of the ballot was pronounced in favour of the former gentleman by a large number of balls.

The following were elected as the officers and council of the society for the ensuing year:—President, the Earl of Rosse; treasurer and vice-president, Mr. George Rennie; secretaries, Messrs Samuel Hail, Christie and Thomas Bell; foreign secretary, Lieut.-Colonel Edward Sabine, R.A.; Peter M. Roget, M.D., the Marquis of Northampton, George Biddell Airey, M.A., Sir James Clark, Bart., M.D., J. P. Gassiot, Thomas Graham, M.A., Leonard Horner, Sir Robert H. Inglis, Bart., L.L.D., John George Shaw Lefevre, M.A., Sir Charles Lyell, M.A., William Allen Miller, M.D., Richard Owen, John Phillips, the Dean of Westminster, and Charles Wheatstone.

The customary banquet followed at the conclusion of the meeting.

## Law Intelligence.

## THE JOINT-STOCK COMPANIES' ACT.

## COURT OF COMMON PLEAS—NOV. 24.

**CURDEN v. THE UNIVERSAL GAS-LIGHT COMPANY.**—In this case Mr. Serjeant TALPOT showed cause against a rule obtained by Mr. Phipson, calling on one Dominique Canesse to show cause why execution should not issue against him as a member of the Universal Gas-Light Company, on a judgment signed and entered up against the said company, under the 66th section of the Joint-Stock Companies' Act (7 and 8 Vic., c. 110). The learned serjeant contended, that a precisely similar application to this had been made before against the same defendant, which failed—the 10 days' notice required to be given to him by the 66th section of the Joint-Stock Companies' Act not having been given, and the rule for issuing execution was discharged with costs. He also urged, that as the costs of the former application had not yet been paid, the plaintiff could not be heard. He also objected, that it did not appear by the affidavit that the defendant was a shareholder for "the time being," under which character the present application was made to charge him. The last application was against him as a former shareholder. This, therefore, on the affidavits, was the same application, and as such it was *res judicata*. The plaintiff had tried his hand once, and was not to be permitted to renew his application ("Till v. Dixon," 12 L. J., N.S. 421; 8 Ad. and Ell. 420).

Mr. Phipson, in support of the application, contended that the case was not heard on the merits on the former occasion, and the principle of the cases that where a plaintiff brought his case defectively before the Court, he could not come again and renew his application, did not apply. This, too, was a new application, seeking to charge the defendant as a shareholder for "the time being."

The Court, in giving judgment, said the non-payment of the costs of the former application was not sufficient ground for staying the present proceeding, as the defendant had his remedy to recover the costs. As to the question whether the defendant was a shareholder or not, there could be no doubt. It appeared that he was a shareholder once, and had signed the deed of the company; and, by the 3d and 13th sections of the Joint-Stock Companies' Act, he continued a shareholder until he had divested himself of that character by the transfer of his shares, and, therefore, execution must go against him. The remaining question was, whether a former application having been made before the Court against the defendant, substantially in the same matter, the Court would entertain the present application; and, no doubt, if the former application had been heard on the question whether or not the defendant was a shareholder, the Court would not have suffered that matter to be reopened. But, in point of fact, the former application failed from the want of sufficient notice of the application having been given. The Court, therefore, thought the plaintiff was entitled to be heard again.

Rule absolute for the issuing of execution against the defendant.

## MINING TRANSACTIONS—ACTION FOR PROFESSIONAL SERVICES.

## NISI PRIUS SITTINGS, WESTMINSTER—NOV. 27.

**HERNIMAN AND ANOTHER v. RABBIT.**—This was an action to recover the balance due on a bill for professional services rendered by the plaintiffs, who are attorneys in London to the defendant, who is a mining agent. The bill, as originally delivered, amounted to 300*l.* 9*s.* 9*d.*; but it was reduced by taxation, and sums paid on account, to 73*l.* 10*s.* 10*d.*, of which 52*l.* were due for services in an action the plaintiffs had commenced for the defendant, but which has not been brought to a termination. The work done, the delivery of the bill pursuant to statute, and the balance due, having been proved—Mr. SKINER (for the defendant) submitted, that as some of the items in the bill were for proceedings in an action not completed, then the plaintiffs were not entitled to recover any portion of their account, until they had performed the whole of the services they had undertaken for the defendant. Mr. RABBIT (for the plaintiffs) contended, that his clients were fully entitled to recover the whole amount claimed, and complained that, after the bill had been taxed by the Master, at the defendant's instance, they should be driven to an action to recover it.

Mr. Justice ELLER said, he thought that at the completion of each several transaction, and not before, an attorney was entitled to be paid for it; and, therefore, that in the present case, the plaintiffs were entitled to recover all but the amount claimed for proceedings in the action which is still pending. The jury, at his Lordship's suggestion, returned a verdict for the plaintiffs for 73*l.* 10*s.* 10*d.*, and his Lordship then gave leave to move to increase the verdict to the amount of the whole balance; if the Court should think they were then entitled to recover it.

**IRON, HARDWARE, AND METAL TRADES' PENSION SOCIETY.**—A general meeting of this charitable institution was held on Monday last, at the London Tavern, when the election of three men and two women on to the funds of the institution, out of a list of 13 candidates, was proceeded with. T. B. Simpson, Esq., the treasurer, in the chair. The charity was, at present, in its infancy, but each succeeding year its funds and prospects had continued to progress, the donations and subscriptions of the last year amounting to 1016*l.* 11*s.* 6*d.*, whilst in the first year they only amounted to 346*l.* 10*s.* During the year the funded property of the society had been increased by the addition of 950*l.* Three per Cent. Consols, and of 800*l.* Three per Cent. Reduced, making a total of 2750*l.* standing in the names of the trustees on behalf of the society.

**HONOURABLE CONDUCT.**—A dinner has been given to Mr. J. B. Graham, by the creditors of his late father, in testimony of their approval of his conduct in liquidating the claims, not only of his deceased father, but those upon the firm of which Mr. Graham, sen., was a member. Mr. J. B. Graham (who has recently returned from Australia, where after a few years labour he has realised a handsome fortune, being a considerable proprietor in the Burra Burra Copper Mine), upon his arrival in this country called all his father's creditors together, and paid off all their claims in full, at the same time giving them a splendid dinner, to which the meeting of last night was a return. Mr. Birdfield, the chairman, in proposing the health of their guest, expatiated upon the exalted feelings which had induced Mr. Graham to traverse a space of 15,000 miles to acquit his father's memory of liabilities to which he was himself in no way legally liable, and concluded an eloquent address by presenting to Mr. J. B. Graham a very handsome silver salver, bearing the following inscription:—"This salver is presented to Mr. J. B. Graham, by his friends in England, to commemorate the most noble and generous act ever recorded in the annals of the commercial history of this or any other country. After many years' absence in a foreign land he returned, under Providence, to do honour to the memory of his late father, by discharging not only all the claims against his estate, but also the joint debts of the firm of which his father was a partner. We who have received this bounty hereby express our grateful thanks, and our admiration of this exalted pattern of virtue and worth." Mr. Graham responded to the chairman's address in a brief but feeling speech, and the remainder of the evening was spent in convivial enjoyment.—*Times*.

**WARRICK'S PATENT FUEL.**—We have heard that this fuel, which is now much used in the navy, is being satisfactorily tested before received into store. The company, to keep up the good sample, have lately determined to pay a larger price at the Welsh mines, and to use no coals in manufacturing the patent fuel which are not carefully examined, and warranted good at the pit's mouth.—*United Service Gazette*.

## On the Winning and Working of Collieries.

BY MATTHEW DUNN, MINING ENGINEER.

No. XXII.—[Continued from the Mining Journal of the 25th November.]

## CHOKE-DAMP AND AZOTE.

Although the preceding observations relative to the necessity for ventilation have mainly applied to fire-damp, yet the collieries totally free from that unwelcome gas are sure to be infested with choke-damp, or carbonic acid gas, especially in open wastes which have been long standing in a dormant state; indeed, the ordinary workings in the whole mine, in the absence of suitable ventilation, become unworkable on account of choke-damp, which, when unmixed with atmospheric air, is as fatal to the light of a candle as it is to human life; and there is a phenomenon belonging to a waste of this description, which it may not be uninteresting to mention—viz., that, although in a stagnant state, it seems to flow and ebb, inasmuch as for a time the exterior air will be seen to rush inwards, as if it were hastening towards some outlet shaft, and shortly again it will be seen to return outwards in a similar manner, and so on in succession at certain intervals. A similar phenomenon is sometimes observable with inflammable air, which will exude from the chinks of the rock, and under a different state of the atmosphere, the same chinks will absorb, as it were, the atmosphere of the mine.

Another species of gas, deserving also of notice, and generally called azote, or after-damp, has its origin from explosions of inflammable air. It assumes the appearance of a dense misty vapour, and resists the application of ventilation in an extraordinary manner. It is by this dreaded gas that so many lives are lost after explosions, as it progressively incapacitates the unfortunate pitmen so exposed from exertion, by benumbing their faculties, disturbing the mind, and casting over the whole body a species of deadly lethargy, so that many persons fall victims to this dreadful pest, who were otherwise uninjured by the explosion, but who, being induced from terror, amazement, or apathy, to tarry rather than push forward, are thus overtaken with eternal sleep. This fact alone points out the absolute demand there is upon the Legislature to do its best to secure an application of the most practical and prompt means of restoring ventilation when deranged by explosion, and which cannot be done unless the owners of collieries are made to provide means, and have persons about them sufficiently acquainted with the subject. It is an undoubted fact, that many lives are needlessly lost by this deficiency of protection.

With regard to fires arising from inflammable air, I do not think that any more proper place can be found to treat of them than this. I will, therefore, divide the subject into two heads—viz.: partial fires and general explosions.

**Partial fires** have been at all times, and especially in collieries producing gas, of common occurrence—that is, although the general ventilation be perfectly unobjectionable, yet certain individual places may explode, by the neglect of a door or brattice, the sudden discharge of gas, the incaution of an individual in the use of his candle, the unscrewing of his lamp, &c. But in all such cases, provided the neighbouring ventilation be of an active and efficient description, although the individuals may be burnt and the occurrence create great alarm, yet the result may be confined to that simple event, and which may probably produce no other consequence than occasioning a greater degree of caution for the future.

**General explosions** are of a different description, and result from some general deficiency in the system of ventilation, or from the improvident disposal of the air and accumulating gases, or that the ventilating system, although good in itself, may, by some unforeseen incident, or some palpable neglect, become seriously deranged. The result of any of these occurrences happening, and being permitted to remain for any length of time unattended to, may produce a considerable accumulation of inflammable air, which, if brought in contact with a naked light, may produce a general explosion. The explosion of a large quantity of gas has the effect not only of spreading destruction in those localities in which it occurs, but it will extend its appalling effects to distant parts of the mine, in which the ventilation may be quite effective; and, as I have before observed, the effects are often more fatal in new collieries, in which everything may appear very perfect, and before the process of accumulating gases may have taken place, than in collieries greatly extended. A general explosion may arise either from the quantity of air being insufficient to dilute the fire-damp, or that the system employed may be so badly arranged as to allow certain considerable portions of the workings or waste to become charged to the firing point; for instance, if a certain portion of the workings producing a perpetual discharge of gas be made to depend upon a single door, which door may be imperfect, and may require frequent opening, or from the neglect of this door, these workings may be placed for a considerable space of time out of the influence of an otherwise efficient air-course; or the air may become highly adulterated with traversing one set of workings, and be imprudently led through another, the main current which requires forcing round the extreme parts may be so ill-secured by stoppings, or the waste through which it may have to pass may be too contracted; the very upcast and downcast shaft may be inadequate duly to ventilate the seam and extent of workings to which they may be applied. Finally, the artificial mode of inducing a steady and effective current through a colliery may be defective. Therefore, if all or any of these cases be permitted to occur, the groundwork will be laid for a general explosion; and here I will take liberty to remark, that in the 30-ft. seams of Staffordshire, the capacities of the air courses are required to be considerably more spacious than they generally are, because, according to the thickness of the coal, an adequate quantity of atmospheric air will be demanded.

The second cause of general explosions has reference to the accumulation of gas in the goaves or hollows of the old workings. In working long wall, the whole gob is in general more or less filled either with choke-damp or inflammable air, and in the goaves formed by the working away of pillars the same thing occurs, notwithstanding a small quantity of air may be made to circulate through certain parts. These accumulations, therefore, unless otherwise provided for, being influenced by the natural increase of the temperature, or the decrease of the atmospheric pressure as before mentioned, will discharge themselves into the adjoining passages; and should such passages be traversed with naked lights, combustion and general conflagration are the natural consequences. The prevention, therefore, of these several casualties, together with the effective prosecution of the work, constitute the science and practical skill of the colliery viewer; and it is to effect these objects that the most esteemed practice, with the application of brattices, stoppings, crossings, split air, dumb drifts, and other contrivances, arising out of the exigencies of difficult cases, and all tending to prevent the accumulating gases of the gob from intermingling with those currents of air, demands energy, judgment, and experience on the part of the managers of coal mines. But in this resource there is a limit, for although the modern principle of subdividing the air into various columns is highly approved, yet the main column may not be sufficiently capacious to permit the necessary subdivisions to be made; therefore, although in principle all may be scientific and orderly, yet the result may be defective.

The effects of general explosions, in respect to those who are unfortunately destined to witness them, have been unhappily too often brought under the notice of the public, but it is imperative here again to refer to them. Suppose, then, a person to be situated at many hundred yards distant from the bottom of the shaft, the horse-road between being fenced on each side with stoppings, and to be traversed by horses, each of which draws a train of 10 or 12 wheel carriages; the workings in which he is engaged being fitted with doors, brattices, and wheel carriages, with numerous men and boys following their respective duties, when suddenly a dreadful rumbling is heard, and immediately followed by a hurricane of red-hot dust, which extinguishes the lights, whilst it hurles down, with terrific fury, everything which lies in its way, tumbling men neck over heels, and striking every one with dismay; this perhaps is succeeded by a temporary calm, like retiring thunder. The first instinct prompts the sufferer to throw himself on his face and shut his mouth, to avoid inhaling the heated and sulphurous air. As soon as the second discharge has ceased, if the person retain his self-command, he will endeavour to collect his wandering senses, and attempt his escape. Perhaps he will be distracted by the cries of the sufferers and the darkness and confusion which prevail, and oppressed by the heated after-damp and the want of atmospheric air, occasioned by the destruction of the ventilation and contamination of the surrounding atmosphere, so that it is more than can be expected if he is enabled to group his way amidst the ruinous materials which obstruct his passage, and should he unfortunately mistake his road, and stagger into any of the old workings, he is irretrievably lost.

New Zealand papers, of the 24th August, mention a report that the royalty upon minerals had been reduced from 15 per cent. on the value, to 1-15th portion of the material raised.

## The Metallurgical Treatment of Ores.

By JOHN MITCHELL, Esq., M.C.S., author of *A Manual of Practical Assaying, &c. &c.*

No. XXIX.—[Continued from November 18.]

**Action of Phosphorus on Iron.**—This substance cannot be well combined with iron in a direct manner, owing to the refractory nature of the one body and the ready inflammability and volatility of the other. The best method of effecting this combination is to reduce phosphates of iron by charcoal; this can be effected at a red heat. Another method is by heating a mixture of iron filings, phosphoric acid, and charcoal—this, however, requires a much higher temperature. The ready decomposition of the phosphates by carbonaceous matters is a fact upon which too much stress cannot be laid, on account of the very frequent occurrence of phosphoric acid in iron ores; indeed, the author has found this substance to be present in nearly every production of the mineral kingdom—thus bearing out, to the fullest extent, the observations and experiments of Mr. Fownes, on the existence of phosphoric acid in substances in which its presence was previously not suspected. Its quantity in iron ores is sometimes very considerable, as shown in former papers, by analyses there given. In order to obtain a determinate phosphate of iron, phosphate of iron is mixed with a fourth of its weight of powdered charcoal. The mixture is placed in a crucible, at a strong heat. A fused metallic-looking button is obtained, possessing the colour and lustre of iron; it is brittle, and ready reducible to powder—its fracture is granular, and slightly deeper in colour than steel. It is not magnetic, and dissolves with difficulty in nitric acid and aqua regia, and is quite insoluble in hydrochloric and sulphuric acids; heated before the blow-pipe, it readily fuses, but parts very slowly with its phosphorus in the oxidizing flame. This point is also one of very great importance to the manufacturer, for it clearly shows, that when ores, containing a very large amount of phosphoric acid are worked, the resulting metal will be contaminated with phosphuret of iron; and that if it be necessary to convert it into malleable iron, much more fuel and labour must be consumed to bring it to a fit state than if ores containing only a small quantity of phosphoric acid were employed; in this one point is the necessity for careful chemical analysis forcibly shown; as we proceed, however, this will be rendered still more evident. The phosphuret, produced as above, is a compound of 77 parts of iron and 23 parts of phosphorus, corresponding to 4 atoms of iron, and 1 alone of phosphorus =  $Fe_4P$ . Iron, containing a comparatively large amount of phosphorus, possesses the property of welding to an extraordinary degree, and becomes more rapidly white than any other class; at high temperatures it is soft, and works with much facility, but after cooling it is exceedingly brittle; and this property is much increased in proportion to the amount of phosphorus present. Although other substances than phosphorus seem to communicate this peculiar property, the latter is most generally the cause. Karsten has made many experiments on this point, and has come to the following conclusions:—That 0.3 parts of phosphorus does not diminish the tenacity of iron in a sensible manner—that containing 0.5 parts is yet good, and will withstand many blows from a hammer. If, however, it contains 0.66 parts, it occasionally breaks by a slight concussion; it, however, can be curved at a right angle, and can scarcely be classed among the cold short irons. If 0.75 parts of phosphorus be present, the tenacity diminishes in a very sensible degree; it then breaks by percussion and by bending; with 0.8 of a part the bars break readily with a blow, and with 1 part cannot be bent. Above this per centage the metal is so bad, that it cannot be employed, excepting for some particular purposes. Iron, however, when prepared from the best ores, contains 0.2 parts of phosphorus. This quantity, and as before stated, 0.3 scarcely affects the quality of the metal, excepting by rendering it rather harder, without in the slightest degree interfering with its tenacity. Bergman and Meyer first pointed out how much of the fragility of some kinds of iron depended on the presence of phosphorus. They treated the ore, or metal, with an equal weight of strong sulphuric acid. The mixture was concentrated—treated with a quantity of water—allowed to cool, and rapidly filtered; a white powder subsided from the filtered liquid, and this, when washed, dried, and fused with charcoal, gave a button of what they thought a new metal, which received the name of "siderum." By fusing this substance with good iron, it was found the latter acquired, in a very great degree, the cold short property. After experiments proved this white powder to be a phosphate of iron.

**Action of Sulphur on Iron.**—Iron possesses a great affinity for sulphur, which substance much augments its fusibility; for, if the metal be heated nearly to redness, sulphur may be made to combine with it by mere contact, and the whole enters into fusion when equal parts of iron and sulphur are heated together; at a temperature a little above redness a button of sulphuret of iron, attracted by the magnet, is produced. The composition of this, however, varies according to the degree of heat employed. Many definite compounds of iron and sulphur are known, but two only can be formed by the direct union of the constituents; others may be formed, by the reduction of certain salts of iron, by the aid either of carbon or hydrogen, or by the reduction of oxide of iron by sulphuretted hydrogen. Converted into sulphuret iron, as before stated, it becomes very fusible; it is also extremely brittle. From this we may rationally conclude, that the presence of sulphur in iron is very prejudicial to its quality; and, in fact, there are many ores of iron which cannot be worked, owing to the presence of a certain amount of sulphur. The influence of this substance on the properties of iron is so considerable, that a slight trace, not perceptible to any but an experienced analyst, suffices to render it hot short. Without stating that other bodies do not produce a similar effect, it has been proved that a trace only of this substance is sufficient. In some of Karsten's experiments, he states that, in order to ascertain the amount of sulphur necessary to prevent iron being workable under the hammer, he added to the charges of a blast-furnace a certain amount of gypsum, not having at command any sulphuretted iron ores. The metal produced was refined, and gave a very hot short iron, which could be slightly drawn at a white heat, but which, however, cracked so much, that it was completely impossible to complete the forging. The welding property had entirely disappeared. Analyses showed the presence of only 0.08875 parts of sulphur; so that it appears but 84 parts of sulphur in 100,000 parts of iron was sufficient to reduce its quality to hot short. In another sample of iron examined, and whose quality, when cold, was excellent, but which was yet red short, gave only 1 part of sulphur for 10,000 of iron. If, however, hot short red iron be heated to redness, and plunged into water, the gases given off have a very perceptible odour of sulphuretted hydrogen. The scoria of crude iron, containing sulphur, behave also in the same manner by the action of water. This seems to be a useful practical test.

**On the Combined Action of Charcoal, Sulphur, and Iron.**—It is a difficult matter to determine the modification iron, combined with carbon, can be made to undergo by the action of sulphur, as also the influence of carbon on the sulphur compounds of iron. It seems that the presence of sulphur, when in large quantity, negates the effect of the carbon, for no difference can be determined between steel cast-iron and malleable iron, when they are strongly impregnated with sulphur. They only manifest properties belonging to iron containing sulphur—neither the state of existence, or the quantity of carbons, seem to have anything to do with the quality. We know a volatile compound of carbon and sulphur—bisulphuret of carbon; may not the sulphur entirely disengage the carbon in this body? it appears very probable; but until some experiments are completed, which, it is to be hoped, will determine this point, it must remain a matter of conjecture. It also seems to be, up to the present, a matter of doubt whether white lamellar iron (as described in the last paper), when once fused, can be completely decomposed by sulphur, for it is found that when malleable iron is heated with sulphur in a crucible, it readily combines with steel; in grey iron less readily, and it scarcely seems to act on white iron. Karsten states, that in experiments made in crucibles, it was proved that sulphur expelled carbon, but that sulphur was not removed by carbon; it was not, however, ascertained in what state the carbon was separated. If white iron be fused with sulphur in a close crucible, the carbon is found on the lower part of the button as a sooty matter, entirely without lustre. It is different, however, in the case of the reduction of the oxides of iron by means of carbon in the presence of sulphates (as in the ordinary course of manufacture), for the sulphur combines with the iron before the latter has had time (so to speak) to enter in combination with carbon. We are also constantly receiving proof of the existence of triple compounds of iron, sulphur, and carbon, for many commercial cast-irons contain sulphur, in presence of a considerable amount of carbon. The manner of existence of the three elements in these compounds is yet unknown; but it seems probable, that the carburet of iron merely holds the sulphuret in solution, when the sulphur of the latter is not present in sufficient quantity to completely destroy the effects of the carbon. Under ordinary circumstances, sulphur and carbon unite together, but when both are in the free state and at a high temperature, it is generally obtained by heating carbonaceous matter with sulphur or with bisulphuret of iron. It is not yet well ascertained whether magnetic iron pyrites undergoes any marked change by heating with carbon. It is, however, a most interesting point for the metallurgist to ascertain what action takes place between sulphur compounds and carbon at a high temperature. When proto-sulphuret of iron is exposed in contact with charcoal for many hours at a white heat, it seems to undergo no essential change, excepting absorbing a very minute quantity of carbon, and becoming rather more brittle. When carburet of iron contains only such a very small quantity of sulphur that its characteristic properties are but slightly altered, it acquires a greater fusibility, which is more evident in its steel and malleable iron; it passes more rapidly to a welding heat, can scarcely support the blow of a hammer, and cools very rapidly. These combined conditions seem to be the cause of this iron being incapable of welding. When, however, the quantity of sulphur is greatly increased, the metal entirely loses all its welding properties, and falls to pieces under the hammer; and sulphur, in still larger quantities, renders it both hot and cold short. The influence of sulphur in cast-iron is yet more striking. Very strongly sulphuretted iron cools suddenly; by the least apparent fall in temperature, it thickens and becomes nearly red. The principal effect of sulphur is to augment fusibility, and, consequently, promote the formation of white iron, and prevent that of graphite.



or it is well known that the latter can only be formed at a very high temperature—hence we have an explanation of the difficulty of obtaining grey iron where sulphureous ores are used. Another most singular phenomenon is, that grey iron which, when in a fused state, has a little sulphur thrown upon it, becomes entirely white, however slowly it is cooled, and continues to keep the characteristics of that peculiar kind of iron. This seems to arise from the conversion of the graphite of the grey iron into sulphuret of carbon by the action of the sulphur—at least, some experiments made by the author appear to carry out this view. It is, however, undergoing further investigation.

In next week's Journal the combined action of phosphorus and charcoal, and the action of acids, will be discussed.

#### THE GOLD MINES OF RUSSIA.

Among the voluminous mass of the Parliamentary papers of last session will be found a single sheet, entitled, "A Return of the Quantity of Gold produced in the Empire of Russia." This return was furnished by Sir E. Baynes, the English Consul at St. Petersburg, and was laid before the House of Commons, in consequence of the wish expressed by that body in an address presented to her Majesty. It consists of two pages only—yet, light as it is, when compared with the mighty documents from the midst of which we have just drawn it forth, it contains startling facts, and is suggestive of very weighty considerations.

Our readers are probably aware, that, previously to the discovery of America, Europe was comparatively poor in the precious metals. They may not be equally cognisant of the fact, that the value of gold, as compared with silver, was not so great then as it is now. It has been stated that, in the three centuries which have elapsed since its discovery by Columbus, the New World has, till within the last few years, supplied yearly four times as much gold and about 12 times as much silver as the whole of Europe and Asiatic Russia together. The speedy consequence of such an influx of the precious metals into Europe was, as is well known, a great depreciation in their value, as compared with the value of all other articles, of which the supply did not increase in a like ratio. We find, for instance, that the prices of wheat and similar products were trebled between the year 1570 and the year 1630. Another, but less obvious consequence was a considerable rise in the value of gold as compared with that of silver. At present, the values of equal weights of gold and silver are in the proportion of 15½ to 1; the total amount of silver in existence being, probably, to that of gold in about the proportion of 40 to 1.

The largest exports of the precious metals from America were from the year 1800 to the year 1810. It was computed by Jacobs that the average yearly supply derived from the New World, was, at the time he wrote, diminished by one-half. We must remember, however, that this decrease is not to be attributed to the supply being exhausted. The real cause of the falling off is to be found in the war between Spain and her trans-Atlantic dependencies, which commenced in the last-mentioned year, and, the consequent paralysis of mercantile enterprise, from which they have not yet recovered. Such a diminution of supply is, therefore, clearly temporary; and we may look forward to the future yearly exports of the precious metals from America, as not only equalling but even exceeding those of the ten years we have mentioned. The energy of our trans-Atlantic kinsfolk—the Normans of the New World—must, sooner or later, be felt through the entire length and breadth of that continent; and the increased production of the precious metals which we anticipate, will be one of its natural consequences. Meanwhile, the total value of the gold and silver annually exported from America has been estimated at about 5,500,000*l.* sterling.

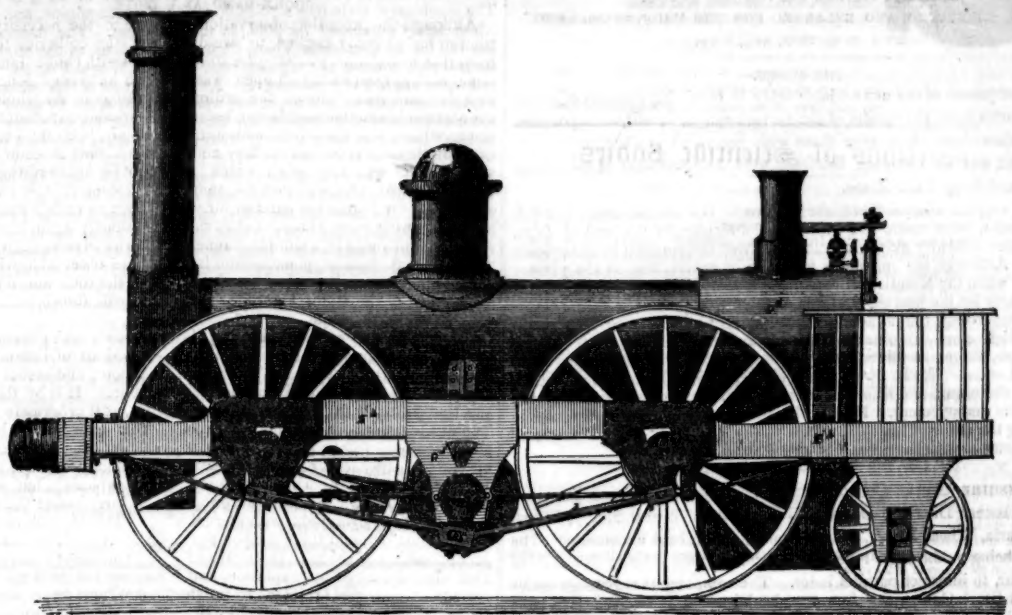
The gold mines of Russia have long been celebrated; but, within the last few years, the quantity of gold produced in that country has increased, with a steadiness and rapidity which is unprecedented. In fact, the increased supply threatens, if it continues, to produce, in a modified degree, an effect similar to that which resulted from the vast influx of the precious metals which followed on the discovery of America. The return before us shows, that the quantity of gold produced in Russia is about four times what it was only 10 years since; and the value of the produce, reported to the Government, in the year 1846, is estimated at nearly 3,500,000*l.* sterling. This estimate, however, does not adequately represent the value of the gold yearly produced in Russia. Sir Edward Baynes tells us, that the official statements, on which his return is founded, only comprise the produce reported to the Government, and that there is reason to believe that considerable quantities have not been declared, partly from peculation, and partly to evade the heavy duties, varying from 12 to 24 per cent., which are levied on the produce of the private mines. We shall not, therefore, be far wrong if we estimate the value of the gold produced in Russia at 4,000,000*l.* sterling per annum, while the total value of gold and silver exported from America is considerably less than 6,000,000*l.*, the greater part of that sum arising from the exports of silver. Nor is there reason to suppose that the increased supply is likely to fail. The produce of the Siberian mines has increased year by year, and it is said, moreover, that we may look for an increased supply from the Oural, the produce of which region has, for many years past, been stationary. Sir E. Baynes, in his return, speaking of our prospects in this respect, says:—"It is said that new mines have been discovered in the Oural; and the fact of an Imperial ukase having lately forbidden the sale of public estates in the region of the auriferous sands of Siberia, justifies the inference, that the Government have made successful surveys in that direction, and anticipate a further profitable development of the gold washings which have been so fruitful during the last four years. Under these circumstances, it would seem reasonable to expect an increase of supply, of which, however, it is quite impossible to estimate either the proportion or the continuance."

Vast as is the accumulation of the precious metals already existing, a yearly increment to our store of gold, so much greater than that of former times, must make itself felt in depreciating the value of that metal, and in raising prices, as estimated in gold, although, no doubt, the extent of our already accumulated stock, will prevent any rise similar in extent to that which was witnessed at the close of the 16th century. We have said prices as estimated in gold, for a principal effect of the increased supply of gold will be to alter the relative value of gold and silver—in other words, to raise the price of silver, with us a mere article of commerce as estimated in gold, our standard of currency. This is exactly the converse of the change in the scale of metallic values, which, as we have already mentioned, followed on the discovery of America. With reference to the probable extent of such change in relative value, we may here remark, that it was formerly calculated, that the quantity of gold produced in America was ⅓ of the silver produced; and that the gold produced in Europe and Asiatic Russia was ⅓ of the silver produced in the same regions. We see, therefore, that, on the discovery of America, the supply of both metals was greatly increased, though not in exactly the same proportions; whereas the enormous increase of gold, to which we now call attention, is not accompanied and balanced by any relative increase of silver, or by anything approaching thereto. We must, therefore, anticipate that the change in the relative value of gold and silver will be much more violent, than the former converse change to which we have alluded, and we may, consequently, expect to see gold and silver approximate in value more nearly than they did before the discovery of America.

Till within a recent period, a large portion of the precious metals, produced by the New World, used to be absorbed by the markets of the East. This is no longer the case. And the absence of such demand will tend to increase the effect produced by the augmented supply of gold. We must also remember that hoarding has, in our own island, been already exterminated by the banking system, which is actively at work, and must sooner or later produce a like result in other countries. Before the increased supply of gold, which we are now more especially considering, began, the annual supply of the precious metals was more than sufficient to replace the loss created by wear and tear. We may fairly infer, that, in consequence of such annual surplus, the precious metals have always been steadily, but very gradually, depreciating in value—the depreciation being checked by the application, from time to time, of gold and silver to new purposes of art and luxury. Such gradual depreciation of gold must, we repeat, be greatly accelerated by the enormously augmented supplies from Siberia. Speaking roundly, we may say that the total annual supply of gold is doubled by the increased produce of the Siberian mines, as it was formerly quintupled by the discovery of America. We shall not here speculate on the possible extent of the change which such an increased supply is calculated to produce in the relative value of gold and silver, nor on the inevitable effect of such a change on our currency and our funded debt.

**LLANDILO BRIDGE, CARMARTHENSHIRE.**—This noble structure is completed. At the Carmarthenshire quarter sessions, Mr. E. Haycock, of Shrewsbury, the architect of the bridge, presented his report, from which it appeared that the bridge, which is the third largest in the kingdom, being nearly 150 feet span, is built principally of black marble, at an expense of about 18,000*l.*, while Gloucester Bridge cost 60,000*l.*, and Chester 40,000*l.*

## DAVIES'S ROTARY ENGINE AND LOCOMOTIVE.



In the *Mining Journal* of the 11th Nov., we gave a short notice of a rotary engine, patented by Mr. Isaiah Davies, of Birmingham, and which is worthy of some consideration. The majority of practical engineers seem to entertain a very unanimous opinion, that the difficulties in obtaining the maximum of the power of the steam with a minimum of friction and cost of fuel in all rotary engines, as compared with the reciprocating engine, is fatal to its ever coming into use. The description of steam-stops, of which Mr. Davies's are on somewhat the same principle, are particularly deprecated; but as Mr. Davies's cylinder is divided into two compartments, working two pistons, with two lateral projections instead of one, as before, the motion is said to be regulated and equalised, and an amount of friction avoided, which was inseparable from the use of one stop only.

Our contemporary, the *Mechanics Magazine*, has followed up, for several weeks, this lengthy but interesting specification; and from the Number for Nov. 18, we extract the following description of a locomotive, worked by one of these rotary engines:—

The diagram is an elevation of a locomotive carriage, with rotary engine attached. A<sup>d</sup> is the boiler; D<sup>d</sup>, the fire-box; E<sup>d</sup>, framing; F<sup>d</sup>, engine, which is supported by checks, G<sup>d</sup>, depending from the framing; K<sup>d</sup>, main shaft of engine; L<sup>d</sup>, crank of engine; M<sup>d</sup> and M<sup>e</sup>, coupled driving-wheel axles; N<sup>d</sup> and N<sup>e</sup>, cranks of the coupled driving-wheels; and O<sup>d</sup> and O<sup>e</sup>, connecting rods, working from the crank-pin, R<sup>d</sup>, of the engine to the cranks, fixed to the driving axles; S<sup>d</sup> S<sup>e</sup> are the gabs, within which the axles, M<sup>d</sup> M<sup>e</sup>, of the driving-wheels, rest; but these gabs are not made parallel and perpendicular, as usual, but of a curved form, for the purpose of preventing, under all circumstances, any undue strain upon the rods, O<sup>d</sup> and O<sup>e</sup>. The curve given to them is composed of small segments of circles struck from one centre; and, supposing the wheel encounters an impediment on the rail which causes the axle to rise in the gab, till it assumes a dangerous position, then, as the axle slides in the periphery of the circle, the parallelism of the action is maintained, and no undue strain or irregular action can possibly affect the connecting rods.

The curve given to the gab in this engine is particularly deserving of attention, because it may evidently be adopted as well in reciprocating as in rotary engines, and with great advantage in both.

Mr. Davies describes another adaptation of his double-acting engine to locomotive purposes, in which the power is transmitted to the wheels through the medium of wheel-gearing.

**SOUTH DEVON RAILWAY.—THE ATMOSPHERIC SYSTEM.**—Mr. Gill, the chairman of the board of directors, has recently addressed the shareholders, stating his views on the impolicy of the abandonment of the atmospheric system, to which he was always opposed, from the great loss which such abandonment would entail on the company. He remarks on the close-borough system which exists in all railway boards, by the re-election of every party going out by rotation, and how desirable it would be that new directors should be annually elected, to the extent of one-fifth, or one-sixth, of the whole body. He considered his responsibility as chairman rendered it necessary that he should explain his views, which were controverted by 11 directors out of 18, being a majority of 4. The following considerations were firmly established in his mind.—1. That owing to the sharp curves throughout the line, and steep gradients on that part of it between Newton and Plymouth, the atmospheric system of traction is peculiarly applicable to the line.—2. That the working cost of the two systems is decidedly in favour of the atmospheric.—3. That the abandonment of the atmospheric system would necessarily involve a loss of nearly 300,000*l.*, and thereby entail a perpetual unproductive charge for interest of about 15,000*l.* per annum.—4. That as all the engines for working the line to Plymouth, as well as those for the Torquay branch, were on the eve of completion, it was essentially important that a trial should be given to the system over the steep gradients.—5. That the offer of Mr. Samuda to effect the repairs and improvements in the longitudinal valve, and to keep the same in good working condition, at a moderate and fixed charge, for a period of 12 months, would make it highly desirable to continue the system at least for that period.—6. That if the locomotive power be substituted, a double line of rails should be laid throughout.—7. That unless the company are willing to pay the Great Western Company a charge equal to 1*s.* 6*d.* per train per mile between Exeter and Newton, and about 1*s.* 9*d.* per train per mile between Newton and Plymouth, for the use of their engines, a further sum will be required to provide locomotive power, with its necessary buildings; and, lastly, that the finances of the company, after the completion of the line into Plymouth, and the Torquay branch, will not admit of any additional expenditure. From the foregoing propositions, it appeared to him that it would be most judicious to make arrangements with Mr. Samuda for working the line between Exeter and Newton, and also to work the inclined planes between Newton and Totness, for a limited period, to afford an opportunity of judging whether such a reduction in the working cost could be realized as to make it expedient to continue the system. In the last report of the directors, it appeared that the cost of the locomotive system was stated to be 2*s.* 4*d.* per train per mile, and the atmospheric 3*s.* 1*d.* per train per mile. He then proceeds to show the reason of this increase over the original estimate of 1*s.* 6*d.* per train per mile, stating, that after the atmospheric apparatus was put into operation, it was found that the engines were totally inadequate to the duty required; instead of 18 or 20 strokes per minute, for which they were designed, they were obliged to be worked at 25 to 30, and even more; that during the latter part of the working a steady reduction took place in fuel; he explains that the system should be discarded after an imperfect trial of six months, under every disadvantage, and inquires whether it would not be wiser to hazard another 300,000*l.*—the estimate for perfecting the valve—rather than incur a positive loss of between 300,000*l.* and 400,000*l.*. A part of the atmospheric property has already been advertised for sale, and it is intended to dispose of the remainder as soon as the requisite arrangements can be completed. He states, that he feels firmly persuaded that the atmospheric system of traction will yet triumph over all opposition, and it is this persuasion that has given him so much anxiety, lest it should hereafter be said that, having first concurred in its adoption, he had, without sufficient consideration, also concurred in its rejection, and, consequently, been instrumental in inflicting upon the shareholders a ruinous and irretrievable loss. A sum equal to 6*s.* per share, if required, would be the total amount to be hazarded by a further experiment for 12 months of the atmospheric system, which he believes will prevent the loss of 300,000*l.* (equal to 15*s.* per share), and place the undertaking in a favourable position. The expenditure for the 20 miles laid down was 432,918*l.*, the whole length being 50 miles, and that the materials if sold, it is estimated would produce about 74,000*l.*

**RAILWAY WORKS.**—The line to Great Grimby and Hull is expected to be completed in a fortnight, so as to be open for public traffic. The very handsome bridge over the Witham is somewhat on the principle of the tubular bridge over Menai Straits. The weight of the rails and the traffic over them is supported by two immense girders of iron, which rest upon cross girders, or sleepers, extending from and fastened to two copper tubes, 6 feet in height, 18 inches wide, and in length from pier to pier, and which bear the weight of the whole. The walls of the Midland Railway are pulled down, so as to admit of the junction over the High-street.—*Hull Packet.*

**BILIOUS COMPLAINTS, INDIGESTION, FLATULENCY, AND AFFECTIONS OF THE LIVER MAY BE CURED BY HOLLOWAY'S PILLS.**—Symptoms indicative of these disorders are a nausea, distention, and spasmodic pain in the stomach, sense of oppression, and sinking after eating, want of appetite, heartburn, languor, dejection of spirits, and general debility. The removal of the cause of complaint is the most important step, for which purpose have recourse to Holloway's pills, as they possess such cleansing and renovating properties that the action of the liver is speedily corrected, the redundancy of bile carried off, the stomach strengthened, the spirits revived, and the patient restored to perfect health. Sold by all druggists, and at Prof. Holloway's establishment, 244, Strand, London.

**HYDRAULIC PRESSURE ENGINES.**—Mr. Joseph Glynn, F.R.S., read a paper on this subject, at the Society of Arts, on Wednesday last, which he illustrated by drawings and models. This description of machine appears to have been long and extensively used in various parts of Germany, especially in Bavaria, and also in Hungary. The mines of Illsang, in the latter country, are drained by water pressure engines; and in one instance a vast quantity of brine for evaporation is forced along a conduit, 60 miles in length, by a series of nine of these engines. A very large engine of this kind has been constructed at Freyburg, in Saxony, by Herr Brendel, the effective power of which has been computed at 70 per cent. The first water pressure engine in this country was that of Westgarth's, who constructed one to work a mine in Northumberland. Smeaton constructed one in 1779, and Trevethick in 1808, since which time the principle seems to have remained in abeyance. Recently a beautiful application of it has been made at Newcastle, in the construction of an hydraulic crane. The object of the machine is to obtain a reciprocating motion upon a shaft, by means of a fall of water, in cases where the head is too great to admit of the employment of water-wheels of the usual dimensions.

**AMERICAN RIFLE MANUFACTORY.**—A correspondent of the *Birmingham Journal*, in a letter from New York, says—"In your gun-making town the following account of an American rifle manufactory may, perhaps, have some interest. It is in Vermont, and is employed almost continually in preparing rifles for Government—100 artisans are engaged, and they turn out 500 rifles per month, all in complete order. The barrel is made from American iron, drawn from flat bars into "scaps" of the proper length and thickness. These scaps are then rolled and welded around a steel rod under a hammer that makes 1500 blows per minute. During this operation the rod has to be frequently withdrawn, to prevent its becoming welded with the iron annealing. The barrel thus formed next goes through the process of "nut boring," turning, trimming, and straightening—the last is ascertained to be correctly done by the eye observing a shadow. The next step is passing through a trial and inspection by Government agents. They are loaded with 100 grains of powder, two balls, and two wads, and fired twice. If they stand this test, they pass on to the process of finishing inside, which is done by rifling machines at the rate of one barrel per hour to each machine. They afterwards pass through the process of "browning." The stocks are made from black walnut, seasoned three years; these stocks pass through six different machines, the most singular one of which is called the "cutting machine," the invention of a Mr. Lawrence. It cuts out the places to receive the barrel, ramrod, lock, patch box, butt-plate, guard strap, side plate, &c., so exact that they require no hand labour. The lock work is forged in dies, passing afterwards through a variety of machines, and coming out in the most perfect shape; each piece will fit in any of the rifles made here, and there is no trying the several parts to make them match each other." "While on the subject of manufactures, I may as well notice a new iron-work, which the other day I stepped out of my way to look at, while on a trip up the Hudson. It has been put in operation by Mr. Bushwell, near Poughkeepsie, on the Hudson. It is erected in the most substantial manner, and calculated to use 10,000 tons of iron ore per year. It has an engine of 120-horsepower. Anthracite coal alone is used, and the same heat that melts the iron drives the engine. The work is to be extended as soon as possible, and additional buildings erected for the manufacture of bars—at present they make nothing but rails.

The 117 arches of the Bury Railway contain 26,187,000 bricks. The large arch over the tunnel and works of the North Western Railway, which is 99 ft. span, and 64 on the skew, contain 2,281,000 bricks, 48,000 cubic feet of timber, and 23,140 superficial feet of 3-inch plank. At these arches 34,000 casks of cement have been used. There is a duty of 6*s.* 1*d.* on every 1000 bricks.

#### ACCIDENTS.

TO THE EDITOR OF THE BIRMINGHAM JOURNAL.

SIR,—Having read an account of the recent appalling catastrophe in the Whinny Hill Colliery, near Whitehaven, my mind has been led to the consideration of this important subject, with a view to prevent a recurrence of such melancholy accidents. I beg, therefore, to make the following suggestions:—1. That a committee of practical coal miners, selected from different mining districts, be deputed to investigate the present state of ventilation in the Whitehaven, Northern, and South Staffordshire collieries.—2. That one person only should be employed to take charge of the safety-lamps in each pit, to cleanse and supply them with oil and wick, and to keep them at all times in an effective state for use.—3. That a new species of light, not requiring trimming by the workman, should be substituted for the one in present use, and the lamp be so constructed that the workman cannot, under any pretence whatever, have access to the interior of it. From a conversation which I have had with Mr. Henry Johnson, of Dudley, on the importance and necessity of improving the safety-lamp, I may assume that my last suggestion is practicable. I understand Mr. Johnson has already commenced a series of experiments upon an improved lamp, which he has very recently constructed. I do hope, for the sake of humanity, that that gentleman will bring out his lamp with as little delay as possible. Bonehill Colliery, Fazley, Nov. 11. E. BAGDALE.

**Drake Walls Mine.**—A shocking accident occurred here, on Thursday last, to a man named Hodge, who, while oiling some parts of the grinder, had one of his arms, and his head, completely severed from his body.

**West Auckland.**—H. Close was killed at the St. Helens Colliery, by the cage, after having been lowered, being raised again too soon, before the last man had time to get out; this was the unfortunate deceased, whose head was crushed between the cage and top of the level, and his body dashed to the bottom of the shaft.

**Bryndis Colliery, Bridgend.**—By an explosion of foul air in the 9-foot vein of coal, a man and a boy were severely burned about the hands and face.

**Swansea.**—T. Thomas and E. Davies were precipitated down the Emily Pit, 184 fms. deep, and killed, through their not having properly attached the bucket to the chain.

**West Bromwich.**—W. Deakin, aged 26, was killed in Mr. Botteley's pit; by carelessly knocking away the supports, the roof falling on him.

**Waterhampton.**—E. Birch was killed by falling down Mr. Fryers pit at Palsall Wood.

**Dudley.**—J. Massey fell down a coal pit at the dock, and was killed on the spot.

**Bilston.**—D. Nicholls, aged 20, fell down a pit and was killed.

**Sedgley.**—T. Bennett having fired a blast, was being drawn up the shaft; he endeavoured to jump into one of the levels, fell to the bottom, and was killed on the spot.

**Bilston.**—Two men and the doggy went down a pit in Sparrow's Field, when one of the men, B. Rowley, was requested by the doggy to prop with timber that part of the pit where he was about to commence work. Rowley tried the spot, and said it was safe enough without propping; he then commenced "holing," but shortly afterwards a quantity of coal fell from the roof—upon its removal Rowley was found to be quite dead, being dreadfully crushed.

**Dudley.**—G. Price was killed by a fall of coal at Messrs. Pershouse and Haines's Smokey Pit.

**T. Moore** was severely burnt by an explosion of gas while working at Messrs. Blackwell's Russell's Hall Colliery.—T. Stringer was severely injured by a fall of coal in Mr. Mills's Colliery, at Rowley.

**Oakenhorpe.**—As some bricklayers were erecting a chimney for the use of the coal-field at Oakenhorpe, a brick was accidentally thrown off the chimney, and unfortunately fell upon one of the labourers, and hurt him so severely that his recovery is doubtful.—An explosion took place, and the two poor fellows were fearfully lacerated. No hopes are entertained of the life of one, T. Mull, but the other, W. Button, is in a fair way of recovery.

An explosion of fire-damp took place at Strangeways Colliery, by which two men were dangerously burnt.—At Messrs. Blundell's colliery, J. Bolton was being wound up from the pit with another man, when the engineer hoisted them higher than usual. Bolton imagined they were going to be pulled over the pulleys, and, for the purpose (as he thought) of saving himself, leaped from the basket, fell down the pit, and, of course, was instantly killed.—*Birmingham Journal.*





## The Compendium of British Mining.

REVISOR, CORRECTED, AND ENLARGED FOR THE "MINING JOURNAL,"  
BY J. Y. WATSON, ESQ., F.G.S.

## THE MINES.

In consequence of the unavoidable delay in obtaining the correct statistical accounts from the agents of the various mines, it will be impossible, as we before observed, to give them with regard to any methodical arrangement, and we, therefore, this week give the particulars of the Devon Consols and Stray Park Mines.

In the original compendium, the returns of the mines, under Cornish management, were made up, with great difficulty, to the end of 1842. Still greater difficulty exists in getting correct information to the present period. Although the managers ought to be aware, that at the present moment, when the attention of capitalists is more than ever drawn to mining property by the leading portions of the public press, the fullest information regarding the mines is especially required to give that confidence which alone can obtain them encouragement and support. A few years since, shares in mines were purchased, often without inquiry as to their real state. Not so now; those who embark will know beforehand, not only the nature and tenure of the property, but what reliance they can place in its management. Having this in view, we are more particular in obtaining the dates of leases, the dues paid to the lords, and the names of those entrusted with the pecuniary and other affairs.

**DEVONSHIRE GREAT CONSOLIDATED COPPER MINES**, near Tavistock (in the Eastern District), consist of Wheal Maria, Wheal Fanny, Wheal Anna Maria, Wheal Josiah, Wheal Emma, and Wheal Fremontor. The first five being on the same lode, at the latter an adit is being driven from the Tamar, to intersect parallel lodes. The company is registered under the Joint-Stock Companies' Act, 7 and 8 Vic., and is divided into 1024 shares—17 per share paid up; market value about 220l. per share, and paying dividends of 5l. per share every two months, or 30l. per annum. Managed by a board of directors in London—viz.:

Chairman—W. A. Thomas, Esq.  
R. S. Gard, Esq.  
Francis Morris, Esq.  
Secretary—Mr. A. Allen.  
Managing Director at the Mines—Thomas Morris, Esq.  
Principal Mine Agent—Mr. J. H. Hitchens, of Tavistock.

The mines, 1485 fms. in extent, east and west, on the course of the lodes, are held on lease for 21 years, from the 25th March, 1844, from his Grace the Duke of Bedford, at 1-12th dues. Operations were commenced in August, 1844, and ore first sold in February, 1845. The ore returned from this time to December, 1845, was 11,258 tons, yielding, with carriage, 103,384l. 2s.; out of this 55,206l. were divided among the shareholders as profit the first year. From January to December, 1846, the returns were 15,618 tons, yielding, with carriage, 101,805l. 8s. 11d.; out of this 37,888l. were divided as profit. From January to December, 1847, the returns were 14,413 tons, yielding, with carriage, 102,889l. 12s. 3d.; out of this 15,372l. were divided as profit, and a large fund reserved as a working capital. From January to September, 1848 (nine months only), the returns were 11,974 tons, yielding, with carriage, 72,790l.; out of which 30,720l. were divided.—Total returns to end of September, 1848, 382,869l. 13s. 3d.; total dividends paid to shareholders, 139,264l. The present returns, which are about 1500 tons per month, and yielding from 9000l. to 10,000l., are made at a working cost of about 4000l. The principal operations have been at Wheal Maria, the first mine discovered, and which, upon an outlay of 1000l., yielded the shareholders 55,206l. profits the first year. At this mine there are two shafts, the engine-shaft being sunk 80 fathoms. At Wheal Fanny, now yielding large returns, there are two shafts—the western now sinking below the 45 fm. level, and the eastern sunk to the 55. At Anna Maria Mine, also making returns, the engine-shaft is sunk to the 60 fm. level. At Wheal Josiah, now the richest mine of the lot, there are two shafts, Hitchens's and Richards's, both sunk to the 80 fm. level. At Wheal Emma, on the eastern part of the set, an engine-shaft is in course of sinking on the course of the lode. The machinery, which is very extensive and efficient, consists of three steam-engines, water-wheels, grinders, tram-roads, and every thing in proportion to the extent of one of the greatest mines in the country.

To the original discovery of Wheal Maria, many parties lay claim. I have heard at least half-a-dozen gentlemen say, they could have had the mine years ago; and it seems strange, if such were the case, all the lynced miners of Cornwall and Devon (who, in many cases, can see through fathoms of ground) should have missed the riches almost exposed to view, and they should have fallen into the hands of five gentlemen in London. The mines are situated in the midst of some of the most gorgeous scenery in Devon, on high ground, near the banks of the river Tamar, and surrounded on all sides by beautiful woods, in which the late Duke of Bedford preserved his pheasants—in fact, where the engines and other works of the mine now stand, was preserved ground; and the late duke granted permission, many years ago, to an old miner to sink a pit there and search for mineral; and he got down several fathoms, when the duke, finding his pheasants disturbed, ordered him to desist, and ever after refused to grant a lease for mining purposes.

Mr. Hitchens, the present manager, believing the ground presented good geological features, and having a presentiment of success, joined the present directors, Messrs. William A. Thomas and R. S. Gard, who, after a time, obtained a lease for 21 years from the present duke, and undertook to lay out 10,000l. in exploring it. In the latter part of 1844 operations were commenced, by clearing out the very pit sunk by the old miner; and, before 2000l. were spent, a vein of copper was found 20 fms. from the surface, worth 3000l. per fm.; and, as will be found in the statistical account, in the first 12 months 55,206l. were divided as profit among the few proprietors. What can better show the uncertainty of mining, and the enormous sums realised by one lucky hit? Had the poor old miner been allowed by the late Duke to sink his pit 12 ft. deeper, he would have found these riches, which have, in little more than three years, yielded the present Duke a rental (for a few acres of wood land) of upwards of 30,000l., and are likely to pay him 10,000l. a year for the length of the lease.

The neighbouring mines of Maria may be dismissed in a few words. West Maria has stopped, and of those remaining none have come to any profitable result, or realised the expectations formed of them, and would lead us to the belief that the riches of Maria are a large deposit of mineral, formed by the junction of several veins, which are again split up west by the rocks of Capel Tor. Of the mines alluded to, there are to the west Wheal Fortescue, South Maria, Wheal Williams, and Lanthorne, and East Josiah to the east, and in which it is said a good gossan lode, similar to that discovered at Wheal Josiah, has been seen.

## CAMBORNE DISTRICT.

**STRAY PARK AND CAMBORNE VEAN MINES**, in the parish of Camborne, are of great extent. In 1000 shares, amount paid up in calls 6373l. 5s. 11d., or about 6l. 7s. 6d. per share. Market value 18l. per share. Conducted on the Cost-book System, and a full and explicit statement of every account respecting the mines, such as working expenses and returns, with the wages earned by the men, and the prices paid for materials, &c., printed and circulated among the shareholders (after being audited) every two months. Parser and manager, William Vawdrey, Esq., Penpoll, near Hayle. Agents, Capt. Eustice and Capt. E. Ralph. The mines consist of four sets—Stray Park, Camborne Vean, Wheal Gow, and Wheal Francis. Camborne Vean, the largest, is held on lease for 21 years from 1838, at 1-18th dues—the lord being Charles Reynolds, Esq., of Trevenon. The others held for 21 years from 1844, at 1-15th dues, of the Baroness Bassett, excepting Wheal Francis, which is held from 1847, and in which her ladyship holds a quarter part of the mine. The mines have been worked by different companies a great many years, and have altogether yielded profits amounting to 200,000l. The present company, under the management of Mr. Vawdrey, commenced operations in Sept. 1840, and first returned ore in 1841. From that time to the end of June, 1848, the returns have been 18,776 tons, yielding in money 94,910l. 18s. 2d. The increase in the returns may be seen by comparing the first and last years—viz. 1841, 1060 tons, yielding 6194l. 1s. 7d.; 1848, 3190 tons, 13,957l. 9s. 6d. The profits divided by the present company have amounted to 7000l., or 7l. per share. The present returns amount to 250 tons of copper ore per month, yielding a profit of about 250l. per month. The

operations at the mines having been rather limited during the last year, in consequence of the low price of ore, no dividend has been paid, but it is the intention to declare one either in December or early in January. The machinery, including a 60-inch cylinder steam-engine, and a steam-whim lately purchased for 900l., is most efficient. The deepest level is the 180 fm. in Camborne Vean; from this level, up to the 60, there are several rich courses of ore going west towards Wheal Francis, in which sett some are already productive. As the progress of this mine since the present company took it up, shows what may be done by good management and steady perseverance, we may state, that for six years previous to 1840 the mines were a losing concern; that when they took possession in 1840, there were 60 fms. of water in Camborne Vean, and 10 fms. in Stray Park. The eyes of the mine had been picked out; the engine and whims in a dilapidated condition, and no materials on the mine for future operations. To clear out the mine, open the deepest levels, examine the lode, and get the mine into a proper state of working for future discoveries, took three years—viz. from September, 1840, to December, 1843. The cost of all this was as follows:—opening ground 715 fms., 4894l. 11s. 4d.; cutting down Camborne Vean engine-shaft 160 fathoms, 1028l. 16s. 10d.; steam-engine, 60-inch cylinder 1365l.; engine-house, and erecting engine, 450l.; pitwork complete, 150 fms.; 2500l.—10,238l. 8s. 2d. Of this sum 6373l. 5s. 11d. were subscribed in calls (3000l. in 1841, 373l. 5s. 11d. in 1842, and 3000l. in 1843); the remainder was paid from the returns of the mine, which, during that period, amounted to 5351 tons, yielding 29,548l. The total cost of working, including supplies, pitwork, tribute, and lord's dues, during the same period, amounted to 35,326l. 12s. 11d. The mine standing clear by the call of 3000l. in December, 1843, the returns from that period met the cost, and of late have left considerable profits, with ore discovered (according to the statement of Mr. Vawdrey, the manager) sufficient to return 250 tons per month for two years, without further discoveries. Reports of the underground operations are published in the *Mining Journal* every month.

[To be continued in next week's Mining Journal.]

## Mining Correspondence.

## ENGLISH MINES.

**ASHBURTON UNITED**.—Capt. J. Kernick (Nov. 28) reports.—Being at present engaged preparing our tin for market, so as to get the monthly returns off in time, I am unable to forward a detailed report this week. I may, however, remark, that there has been no material change since my last.

**BARRISTOWN**.—Capt. T. Angove (Nov. 24) reports.—The ground in the 27 fm. level end, driving south, is irregular, and very much broken. In the 15 fm. level end east we have branches of the lode, containing spots of lead, and the ground much more favourable. In the adit end east, the lode is producing about three-fourths ton of lead per fm. The lode in the winze, sinking in the bottom of the adit level, east of cross-course, is 4 ft. wide, producing 1 ton of lead per fm.; we find the water in it very much increasing as we get down; the pitches in the back are not looking altogether so well.

**BEDFORD UNITED**.—Capt. James Phillips (Nov. 29) reports.—At Wheal Marquis, the ground in the engine-shaft continues favourable. In the 90 fm. level we are still driving north, not having reached the north wall of the lode. There has been no lode taken down in the 80 fm. level east. The lode in the 70 fm. level east is 2 feet wide, producing good stones of ore. We weighed at Morwelham, on Friday last, our Sept. parcel of ores, sold the 23d, 103l. 16s. 2d.

**CARADON UNITED**.—Captain William Penrose (Nov. 20) reports.—We have driven the 88 cross-cut, north of shaft, 12 fms. 1 ft.; in this level we have cut through Worshead's lode and the tin lode; the latter is split in several branches, some from 2 in. to 12 in. wide, composed of peach, spar, mundaic, can, and small portions of copper ore, and I have reason to believe these branches will fall together in depth, when I have no doubt they will prove productive in this level; Worshead's lode and this is about 3½ fms. apart; we believe the copper lode is still before us; for this cross-cut we are giving 10l. per fm., by two men. We are now driving west on Worshead's lode by two men, at 3l. per fm.; in from cross-cut 7 fms. 2 ft.; this lode in the present end is from 6 ft. to 7 ft. wide—a very strong compact lode and well defined, composed of gossan, soft sandy spar, portions of soft iron, with a quantity of prisms, and have seen some small portions of copper ore, with oxide of copper; its underlie is not quite 1 ft. in a fm.; if this present dip continues, we shall have this lode in the 10, 170 fathoms deep from surface, and have every reason to believe this will prove to be a productive lode in depth. To sink the shaft deeper, it is necessary to drive around the crushed ground; this will take up most of the top water in the 88, when we shall be able to sink again. In driving around the shaft, and opening it in the 88—Labour cost, 30l.; altering pitwork to sink, 5l.; to sink 12 fms., at 18l. per fm., 216l.; timber and iron, 80l.; pumps, 15l.—346l. If we should have moderate speed, we could do it for much less. When the shaft is in proper course to sink, it is likely we can sink from 2½ to 3 fms. a month. The adit shaft is nearly 20 fathoms deep from the first opening; we have driven 213 fms. nearly due north, cut several lodes and branches, have driven on two lodes, in all nearly 40 fms., and met with good portions of copper ore. There are a great many more lodes, some not a great distance from the present end. At the top of this hill, the adit will come in about 37 or 38 fathoms deep; from the adit, to the top of the hill, is about 132 fathoms, and to reach Worshead's from the present end is about 180 fathoms from the present; price to drive 5l. 10s. per fathom; when the cross-course can be met with, most likely the end can be driven for 3l. per fm., as we have seen several very promising lodes to the surface; I consider it to be a good speculation to keep six men in this end; the labour, including materials, will cost about 22l. per month, but you can put less men if you like.

**COOMBLAWN**.—Capt. J. Hosking (Nov. 27) reports.—In driving west of cross-course, in the 20 fm. level, a decided improvement has recently taken place; the lode is now 18 in. wide, composed of blende, iron pyrites, prisms, and rich silver-lead ore; but there is now such an increase of water issuing from the lode, that I am doubtful we shall not be able to drive much farther on it with the aid of our present machinery.

**DEVON AND COURTNEY**.—Captain N. Secombe (Nov. 28) reports.—The end driving west on the gossan lode, in the 40 fm. level, continues hard; the men are driving by the side of the lode, and no lode has been taken down this week. The cross-cut driving south in this level, to intersect the south lode, is not so favourable for driving as was anticipated, and our progress is rather slow. In the end driving east in the 50 fm. level, the lode is 2½ ft. wide, composed of capel, mundaic, and spar, spotted throughout with ore.

**EAST CROWDALE**.—Capt. S. Paul (Nov. 25) reports.—The ground in the cross-cut, north from Diamond's shaft, in the 17 fm. level, continues in a killas, mixed with spar; the end is bursting with water, and is evidently very near the north lode; the ground in the cross-cut, north in this level, is hard and difficult to drive in; it is chiefly composed of spar, intermixed with killas and peach. The adit level, driving west on the course of Thomas's lode, is improved in the past week; the lode or part we are carrying is 14 ft. wide, composed of peach, prisms, spar, mundaic, killas, and tin, worth 35d. per fm.; this level presents a most kindly appearance, and is likely to increase considerably in value per fm.; the slopes in the back of this level are not quite so good, the lode being much mixed with killas; we have cut the south wall, and find the lode is upwards of 16 ft. wide; it is at present worth 20l. per fm. We have endeavoured to sink Thomas's shaft, but, owing to the almost continual rains, have been obliged to abandon it again. Everything in our dressing department goes on to our satisfaction, and there is enough tin on hand to keep a burning-house constantly at work.

**EAST TAMAR CONSOLS**.—The manager (Nov. 25) reports.—We yesterday held our usual monthly survey, and set the following bargains and pitches:—To drive north, in the 70 fm. level, 1 fm., stent by six men, at 4l. 4s. per fm.; the lode in the present end is full 4 ft. wide, composed principally of hornspar and fluor, with small branches of lead, and indications to warrant our expecting an improvement; to drive south, in the 70 fm. level, 1 fm., stent by 6 men, at 6l. per fm.; the lode in this end is also full 4 ft. wide, but at present hard and unproductive; there is now but little doubt, that before the end of the ensuing week, we shall have a material alteration for the better. To drive north, in the 60 fm. level, 2 fms., stent by four men, at 4l. 4s. per fm., and 5s. in 1l. tribute; the lode in this end is about 18 in. wide, producing good saving work; to drive south, in the 60 fm. level, 2 fms., stent by four men, at 3l. 10s. per fm., and 5s. in 1l. tribute; in this end the lode is 3½ ft. wide, and yielding good saving work. To drive north, in the 46 fm. level, 2 fms., stent by four men, at 4l. 10s. per fm., and 5s. in 1l. tribute; the lode in this end is about 15 in. wide, composed of can and lead, and will yield about 6 cwt. of ore per fm.; to drive south, in the 46 fm. level, 1 fm., stent by four men, at 3l. 10s. per fm., and 5s. in 1l. tribute; the lode in this end is about 2½ ft. wide, composed of fluor-spar, intermixed with capel and lead, to the extent of from 4 to 5 cwt. per fm. The pitches set are as follows:—In the back of the 60 fm. level north, to 4 men, at 9s. in 1l.; ditto, two men and two boys, at 10s. in 1l.; ditto, two men and two boys, 11s.; ditto south, six men, at 8s. 6d. In the back of the 54 fm. level north, to four men, at 10s. in 1l. In the back of the 25 fm. level north, to four men, at 11s. in 1l.; in the back of the 25 fm. level north, to four men, at 11s. in 1l. In the back of the 11 fm. level south, to three men and two boys, at 10s. 6d. Several others were refused, but I have no doubt they will be taken on Monday.

**Nov. 28**.—Yesterday sent a statement of the pitwork bargains and tribute pitches set on the previous day; I now purpose giving you, for the information of the committee, further particulars of the state of the mine. The 70 fm. level has been extended 5 fms. north from the shaft; at the commence-

ment the lode was hard and altogether unproductive; for the last two or three fms. it has been gradually becoming easier for driving, and contained good stones of lead occasionally; in the present end it will yield about 2 cwt. of lead per fm., and, from appearances, I have no doubt but it will continue to improve. The same level is extended 3 fms. 4 ft. 6 in. south of the shaft; the lode has been all but unproductive for the whole of the distance, and there is but little ore to be seen in the present end; there is, however, a vugh, or open branch, on the western wall, which is letting down a good deal of water, and other indications, which induce me to feel certain that a favourable change will take place in the course of a few days. I purpose to keep the shaftmen driving both of these ends one fathom farther before removing them, and placing them to cut the pit, &c., preparatory to resuming sinking the shaft. The 60 fm. level has been extended (during the last month) 3 fms. 4 ft.; the lode has been smaller and much lighter than usual, which accounts for the limited progress made; it has, however, yielded from 4 to 5 cwt. of lead per fm., it will still produce the same quantity, and, from appearances, I think it will very shortly open out, and become easier for driving. The same level has been extended 3 fms. 6 in. south; the lode in this end is larger, being fully 4 ft. wide, but not quite so productive as it was a few fathoms behind; it is tolerably easy for driving; and we are leaving good tribute ground, to hole to the 46 fm. level. The 46 fathom level has been extended 2 fms. 3 ft. north; the lode in the end is about 16 in. wide, and light, but yielding tolerably good work. I do not, however, perceive any indication to warrant the expectation of an immediate improvement. The same level has been driven 4 fms. 3 ft. 2 in. south; for this distance the lode has produced, on an average 5 cwt. of ore per fm., and been easy for driving; it is now harder, and not altogether so kindly, as there is some killas mixed up in it. The pitches are all, without exception, looking better than usual, and will, I trust, during the ensuing month, yield an extra quantity of ore, and more than sufficient to compensate the deficiency that may be anticipated in the productiveness of the ends. I purpose to commence clearing Church Lane shaft on Monday, with the view of draining the water from Charlotte's shaft. If this object can be effected, we shall be able to work the best ground in the whole set.

**HOLMBUSH**.—Capt. W. Lean (Nov. 28) reports.—We shall be in a position to resume sinking the diagonal shaft next week. The lode in the 132 fm. level west is still disordered by small cross-courses, which we are almost daily meeting with, and they are letting down a pretty deal of water, so that we cannot be far from the great cross-course. The lode in the 120 fm. level, east of Hitchens's shaft, on the north part, is 10 in. wide, producing stones of rich copper ore; the lode in the 120 fm. level south is 4 ft. wide, composed of quartz and stones of lead; the same remark will apply to the slopes in the back of this level. The lode in the 110 fm. level south is 3 ft. wide, composed of quartz and stones of lead—saving work; the lode in the slopes, in the back of this level, will produce about 2 cwt. of lead per fm. The lode in the 100 fm. level south is without alteration; the Flap-jack lode, in the same level east, is 2 ft. wide, composed of mundaic, spar, blende, and stones of copper ore. Yesterday we intersected what we think is a part of the great cross-course, it is 18 in. wide—ground still favourable. The branch of copper ore opened on in the 100, since it has got to the west of the lead lode, is small, and the ground rather hard, so that we have thought it prudent to suspend it for the present.

**KIRKCUDBRIGHTSHIRE**.—The agent (Nov. 25) reports.—The lode in the 50 end, west of Stewart's, is 15 in. wide, with spots of lead and small strings through it; the lode in the 50, east of this shaft, is 3 ft. wide—a kindly spar, but unproductive; the lode in the 50, east of Keith's, is 2 ft. wide—a hard spar, with sulphur and spots of ore. The lode in the winze, in the bottom of the 40, west of Keith's, is 3 ft. wide, yielding 1½ ton per fm.—a fine lode. We have not taken down the lode in the winze in the bottom of the 30, east of Stewart's, this week, as we intend leaving it to stand in the bottom of the level, for the sake of a barrow road; the lode in the rise, in the back of this level, is 4 ft. wide, yielding 6 cwt. of lead per fm. In the 20 end, above this rise, the lode is 3 ft. wide, very strong with jack and sulphur, with small spots and branches of lead. We have engaged a vessel for another cargo of lead.

**LLWYN-MALEES**.—Captain Henry Francis (November 27) reports.—In Oliver's winze, sinking below the 14 fm. level, the lode is of the same value as when last reported, and with a tendency to increase. In the London shaft, also sinking below the 14 fm. level, the same fine course of lead ore remains undiminished in size and value; and in the 14 fm. level, driving west, it still continues its course, being almost doubtless the top of a large deposit of metal. I shall be able to complete the 25 tons, mentioned in Mr. Murray's report, from the old stopes, after which I shall give my undivided attention to open the valuable discovery we have made.

**LOSTWITHIEL CONSOLS**.—Captain J. Eustace (Nov. 28) reports.—The branch in the east end is from 8 to 10 in. wide, with good stones of silver-lead ores, jack, fine mundaic, and spar. We yesterday (27th) hauled up a kibbleful of very good specimens. The ground is easier than when set; 2 fms. have been driven in one week, and the men have a good bargain at present. I have ascertained the course of the capel floor; it is 35° south of east, while the Welham lode, on the back, is 10° north of east—a difference of 45°, from which I still infer that we have not seen Welham lode in the 30, but may hope to find it in conjunction with the branch and cauter in about 22 fms. farther driving.

**SOUTH WHEAL MARIA**.—Captain George Francis (Nov. 30) reports.—The 20 fm. level, east from the engine-shaft, has been driven about 8 fms. by the side of the lode since we last cut through it, we are carrying the footwall, which appears softer than where we last intersected it, and is producing some good stones of copper ore.

**SOUTH WHEAL TRELAWNY**.—Capt. W. Lean (Nov. 25) reports.—The lode in the 80 fm. level, south of the cross-cut, is 2 ft. wide, composed of fluor-spar, soft killas, mundaic, barytes, and sprigs of lead; the lode in the north end, in this level, is still split into branches, being in an elvan course; they are composed of spar, barytes, and spots of lead; how wide the elvan course is remains to be proved, but, in order to facilitate the driving of this level, to get through it, we have for the present suspended the driving north on the branch near the shaft, and put six men in it, instead of four. After the accomplishment of the former, we shall resume the driving of the latter, which is 10 in. wide, composed of soft spar, flookan, and mundaic, letting down a pretty deal of water.

**STRAY PARK**.—Capt. R. Eustice and E. Ralph (Nov. 27) report.—In the 70 end, driving west, the lode is 1 ft. wide, yielding 1 ton of ore per fm. In the 80 end, driving west, at Wheal Francis, the lode is small, containing stones of ore. In the 90 end, driving west, at Wheal Francis, the lode is 18 in. wide, yielding 1 ton of ore per fm.; in the winze, sinking below the 90 fm. level, the lode is 2 ft. wide, yielding 4 tons of ore per fm. In the 100 end, driving west, the lode is 3 ft. wide, yielding 6 tons of ore per fm.; in the rise, above the back of the 100 fm. level, the lode is 2½ ft. wide, yielding 5 tons of ore per fm.; in the winze, sinking below the 100 fm. level, the lode is 3½ ft. wide, yielding 6 tons of ore per fm. In the 110 end, driving west, the lode is small and unproductive; this end is about 10 fms. behind the course of ore in the level above. In the 120 end, driving west, the lode is 2 ft. wide, yielding 2 tons of ore per fm. In the 150 end, driving west, the lode is 18 in. wide, yielding 1 ton of ore per fathom. In the 180 end, driving west, the lode is 2½ ft. wide, ore throughout; in the 180 end, driving east, the lode is 2½ ft. wide, ore throughout; in the cross-cut, driving north and south, in the 66 fm. level, we have indications of being very near the lodes, and which we shall, doubtless, intersect before we issue our next report. The tribute ground continues to look very well, and we have a fair prospect of keeping up our sampling.

**TIN VALE**.—Capt. James Hosking (Nov. 25) reports.—This being our regular setting day, I have set the men to drive west, on the middle lode, at 2l. 2s. per fm.; the lode in this end is large, but not rich; the tributaries are working well, and earning good wages; in driving south, 4 ft. from their present workings, they have intersected a good branch of tin; I hope, by the end of December, to set two new pitches on the branches. The stream works are producing a fair quantity of tin, and the men are working in good spirits. As soon as a little fine weather sets in, we shall immediately commence dressing the tributaries' work.—Nov. 26.—I was down to Tin Vale yesterday, and was well pleased to find the tributaries all in good spirits, with a good branch of tin in each pitch; the men, east of the cross-cut, say that they shall have a ton of tin by Christmas; they have driven south of their pitch about 4 ft., and have intersected a branch, about 6 in. wide, good saving work; and the men, west of the cross-cut, have a good lode—in fact, they are all doing well. I will send you my report by Tuesday's post.

**TRELEIGH CONSOLS**.—Capt. W. Symons (Nov. 24) reports.—In the 113 cross-cut, north of Garden's, we are cross-cutting to cut the main lode. In the 100, west of Garden's, lode 2 ft. wide, spar and capels, but little mineral. In the 90, east of east cross-cut, lode 20 in. wide, ore, but not to value; in the 90, west from east cross-cut (new), lode 10 in. wide, worth 6l. per fm., about 3 fms. to hole; set to tributaries, working at 2s.; in the winze, below the 90 end, lode 2 ft. wide, with stones of ore, not to value. In the 70, west of ditto, lode 2½ ft. wide, but little ore. In the winze below the 70, west of ditto, lode 20 in. wide, with stones of ore only. In the 60, west of ditto, lode 1 ft. wide, with occasional stones of ore. In the 50, west of ditto, lode 2 ft. wide, no ore to value, the lode rather promising. In the 20 cross-cut, south of Wheal Parent engine-shaft (new), 21 fms. 1 ft. below the adit, about 9 fms. to cut Wheal Parent lode—sunk in the shaft last month 4 fms. 1 ft.; the men will commence immediately to put down rods, pumps, &c. In the adit east, on the middle lode, lode 15 in. wide, without mineral.

**WHIDDEN**.—Capt. J. Kernick (Nov. 28) reports.—Being engaged to complete our tin dressing, I am unable to report more this week, than that our sinking and driving are proceeding with full vigour.

**WEST WHEAL JEWEL**.—Capt. R. Johns (Nov. 27) reports.—In the 70 fm. level, west of Williams's cross-course, on Wheal Jewel lode, lode 18 in. wide; this lode is improving in appearance in the past week. In the 67 fm. level, west of Williams's cross-course, on Wheal Jewel lode, lode 15 in. wide, when last taken down worth 5l. per fm.; in the 57 fm. level east, on the same lode, last taken down worth 5l. per fm. In the rise in the back of the 67 lode—when last taken down worth 5l. per fm. In the rise in the back of the 67 lode, level, west of Williams's cross-course, on the same lode, lode 18 in. wide, worth 6l. per fm. In the 47 fm. level east, on the same lode, lode unproductive. In the deep adit, west of Hodges' cross-course, on the same lode, lode not taken down during the past week. In the 30 fm. level, west of Quarry shaft, on Tolcarne tin lode, lode 2 ft. wide, producing stones of tin; in the deep



adit, west of Quarry shaft, on the same lode, lode 2 ft. wide, producing stones of tin. The stopes, in the back of the 12 ft. level, east of Pryor's winze, working on tribute, worth 164 per fm. The stopes, west of Pryor's winze, in the back of this level, now working on tribute, worth 804 per fm. The stopes, in the bottom of this level, working on tribute, worth 204 per fm.

**WHEEL TRELAUNY.**—Capt. J. Bryant (Nov. 28) reports.—The lode in the 72 ft. level, north of Phillips's shaft, is still large, and worth 121 per fm.; the south end is much the same as last reported. The lode in the 62 ft. level, north is 5 ft. wide, and worth 204 per fm.; the south end, in this level, is worth 44 per fm.; the stopes, in the back of this level, are without any material change since my last. The lode in the 52 ft. level, north of Trelawny's, is 3 ft. wide, and worth 87 per fathom; the stopes, in the back of this level, are yielding a fair quantity of ore; the lode in the winze, sinking under this level, is worth 104 per fm. The stopes, in the back of the 42 ft. level, are much the same as last reported. There is no change of importance in sinking Trelawny's shaft, under the 52, since my last. At the north mine, the lode in the 80 ft. level, north of Smith's, is large, and worth 54 per fm. On Friday last, we set three pitches in the back of this level, to the south of the shaft, at moderate tributes.

#### FOREIGN MINES.

**IMPERIAL BRAZILIAN MINES.**—Gongo Soco, Oct. 3.—At Bananal, Wray's shaft is now 9 fms. deep; it goes down well through some of the upper strata of the jacotinga formation. We are cutting a pit at the bottom of Goldsmith's shaft, to receive the stone which we shall hereafter break in the cross-cuts intended to be driven in the adit level. I am happy to say we have obtained a little gold from the vein about 8 fms. north of Thomas's shaft, thus lengthening our auriferous ground; we purpose rising on it immediately. At Walker's shaft, the water in the bottom has become so abundant, whilst our surface-water is still falling off, that we found it difficult to keep it drained; added to which, one of the gudgeons of the water-wheel seemed rather to suffer from the load; we have, therefore, allowed the water to rise about 8 fms. below the adit, and employ the shaftmen elsewhere, until we have both the new gudgeon and crank at work in about a month, and until the rains give us more surface-water. Nothing is, however, retarded by this alteration, as we find ample occupation for the people in other parts of the mine. At the 7 ft. level we have commenced a cross-cut westward, to intersect the whole jacotinga formation. We have also opened a communication between Walker's and Thomas's shafts at the same level, which materially improves the ventilation of the latter. We have again sunk Thomas's shaft about 4 ft. in ten days; but the vein in the bottom of it is now split into small branches, and is rather less productive than it has been. We, however, hope the alteration is merely one of those fluctuations to which all lodes are subject, and look to its again improving as we descend.

We have commenced sinking Gibson's shaft, in order to bring the drainage of that part of the mine within reach of Gibson's (Catta Preta) wheel, and thus to have the old wheel for other service. Hollingsworth's shaft is about 5 fms. below the adit; the ground is favourable, and we are sinking rapidly; our western cross-cut, in the adit level here, has reached the limits of the jacotinga; but we are still penetrating that formation in our eastern cross-cut; we have yet seen nothing better than the veins on which we had previously worked, and have, therefore, resumed driving southward on them; the little old stamps are now in order, and we wait only for a supply of surface water to work them. A tram road, for the removal of rubbish from Walker's shaft, is in an advanced state; and, in 10 days more, the commissioner's house, will be in habitable condition.

Oct. 13.—Before the end of the present year, we expect to have so far exhausted the matter yet remaining, near Goldsmith's stamps, in Gongo, as to be unable to keep it supplied. We purpose then removing it, and passing a stream of water through the glen in which it is situated, and thus washing away all the jacotinga we can bring within reach, catching whatever valuable matter it may contain on hairy skins, in the same manner as the pulverised ore from the stamps is treated. Whether, however, anything of consequence may be thus extracted, or whether previously unseen veins may be discovered, can be known only by trial; but, I lament to say, our hopes of both are faint. At Bananal, Wray's shaft is 12 fms. deep, is still dry, and the rock in it much as usual, except that it is a little harder. As we hope to drain the surface east of Goldsmith's shaft, we have discontinued the cross-cut in that direction in the adit level; the western cross-cut, from the same shaft, proceeds slowly, as the rock in it is very hard; we continue the rise, above the adit level, between this shaft and Thomas's, and the vein continues much as before. The cross-cut, from Walker's shaft, in the 7 ft. level, has intersected nothing worthy of notice; a large stream of water, however, enters it, and Thomas's shaft has been, therefore, somewhat relieved. We have again sunk that shaft about 4 ft.—the bottom being now about 43 fms. below the 7 ft. level; there is a short piece of very productive vein in the deepest spot; the remaining portion, however, is not rich; the bottom of Gibson's shaft and the 7 ft. level approaching it, are very hard, and our progress is, consequently, slow.

Hollingsworth's shaft will reach the 7 ft. level in a few days, when we shall immediately drive southward, to prove the "shoot" of ground in which we found gold at the adit level. The veins in the adit south are poor, and we contemplate again cross-cutting the ground in the end. Our eastern cross-cut, in this level, has intersected a vein, which affords a good sample of gold. The little old stamps were set to work on the 10th inst., and we have since had a continuance of rain, which we hope will keep them going. Every other part of the work goes on with the usual regularity and expedition.

**Bananal.**—I trust my explicit details by every post, accompanying the captains' reports, have been satisfactory as to our progress at Bananal; the late gold returns cannot but be gratifying to you, and I trust they will continue to be so. The discoveries, south of Hollingsworth's shaft, and north of Thomas's, in the adit level, although the returns from them have hitherto been but trifling, are in the highest degree encouraging to us, as proofs that the auriferous portion is not limited to a single locality, but is of considerable extent. We are now anxiously looking forward to the 7 ft. level getting forth beneath these spots, one, at least, of which will be thus explored during the present month. We shall dispatch the troop to Rio with our gold at the usual time, about the month of November. This is the last time I shall have the pleasure of addressing you from Gongo, as I purpose removing to reside at Bananal, on the 16th inst.

**Gold Report.**  
From Gongo Soco, from 13th Sept. to 12th Oct. .... Lbs. 43 5 10 6  
From Bananal, from ditto to ditto ..... 30 10 9 0—44 3 19 0  
Gongo—Total from 1st July ..... Lbs. 30 9 1 0  
Bananal—Total from ditto ..... 121 2 7 0—171 11 8 0

**NATIONAL BRAZILIAN MINES.**—Cocoes, Oct. 2.—The ground in the western end presents a very promising appearance, and there is no doubt of discovering some rich veins in going westerly, but the distance we have to drive to intersect them is uncertain, as the Terra Chibida is reported to have been abandoned, on account of the irregularity of the lode.

Oct. 12.—The lode in the western end is still very promising, and the samples taken (one in particular) has been more encouraging than any we have seen westerly from Walker's cross-cut.

**Cuiaba, Sept. 27.**—The stone still continues productive, and there is every appearance of its lasting; a change has lately taken place in the colour of the stone, which made us fearful of its proving less auriferous—the contrary has, however, shown itself to be the result; and with its change of colour, it has also changed its hitherto hard nature to a much softer and less compact one. Some very pretty specimens of gold have been taken from an arch of ground which was left to support a part of Collett's stopes.

Cocoes produce, from 26th Sept. to 31 October ..... Mks. 4 3 6 25  
Ditto ditto, from 4th Oct. to 13th ditto ..... 3 0 0 22—7 3 7 9  
Cuiaba produce, from 16th Sept. to 26th Sept. .... Mks. 4 3 7 23  
Ditto ditto, from 26th Sept. to 6 Oct. .... 4 6 4 56—9 2 4 7

Total ..... Mks. 16 6 3 16

**ST. JOHN DEL REY MINES.**—Morro Velho, Sept. 8.—I had this pleasure on the 29th ult., and in a postscript thereto was enabled to acknowledge receipt of the board's and chairman's dispatches to the 4th July.

Produce for Aug.—19,864 oits., equal to 190,832 lbs. Troy, from 5277-2 tons of ore, yielding 3-8 oits. per ton.

Stamps working during the month, average only 78-29 heads. Owing to the diminished supply of water as the dry season advances, the Susannah has done but moderate duty, and the Warre almost nothing, having crushed only 100 tons of stone during the month. She is now definitively stopped. The supply of stone has been sufficient, not only to enable us to furnish from the mine nearly the whole requirements of the stamps (having only had occasion to spall 100 tons from the rejected heap), but also to pick during the month to the extent, according to the reduction officer's calculation, of 406 tons, though I am of opinion this is over estimated, and that 800 tons would be nearer the truth. The quality of the ore has, on the other hand, been but middling, having yielded only 8-8 oits. per ton; but I have no doubt, that the splendid produce of 19,864 oits. will prove highly satisfactory to the board.

Cost for Aug.—Rs. 40,406 £310, exchange 23½d. .... £3998 10 4  
Produce—19,864 oits.—less dues, 7 per cent., 1390—18,474, at 7s. 5d. 1084 14 6

Profit—£2908 3 10

The tremendous amount of these costs has, I acknowledge, taken me by surprise, and caused me much uneasiness; the more so, because in writing to the board respecting the costs for July (Rs. 36,630, exclusive of my family's travelling expenses), I had, in conformity with my own anticipations, led you to expect a diminution in August of at least Rs. 3000. Yet, after carefully analysing every item, I am fully convinced that no part of the expenditure for this last month could have been avoided, without detriment to the company. The consumption of timber for the amalgamation-house, the new stamps, and the new hospital, has been necessarily very great. Iron, from an average of Rs. 1800, at £2000, has in Aug. sprung up to Rs. 3520; but, then, it would be

observed, that in order to push forward more rapidly with the heavy amount of iron work required for the amalgamation-house and the new stamps, I kept the smiths working on overtime, and the forges are in activity day and night. Boyer iron also figures for a larger amount than in any previous month; not only from the larger number of borers now in the mine, but also from the necessity of boring and blasting in the tunnels now constructing for the new channel for the Chrystae's water. The same observations apply to charcoal, gunpowder, safety-fuze, hired labour, &c.; but though almost under every head the board must naturally be prepared to expect an increase in the costs, in proportion to the great extension given to our operations, as well on the mine as on the surface, yet I beg them to be assured that I shall continue to watch the expenditure with the most jealous vigilance, nor do I apprehend it will again, for a long period at least, reach the formidable account of the last two months. In the meantime, and despite of the heavy costs, the really handsome profit of 3906 £3s. 10d. as the result of the month's workings will, I trust, give satisfaction to the board.

**Inclined Plane.**—Captain Goyen is at present employed in extending this further down the Cachoeira Mine, and in preparing a fourth hauling station thereon; he is likewise, with the assistance of Thomas Tregellas, preparing, in overtime, the model of the carriages, which will be required when the system of inclined planes shall be extended to the other mines; this model, when completed, will be sent to the board, to have the carriages constructed in England.

**New Watercourse** (in aid of the Bananal rego).—This is being pushed forward with all possible diligence, and Captain Treloar expects that the water from the first source of supply, calculated at 40 to 50 cubic feet per minute, may be turned on about the beginning of next month, the remaining 50 cubic feet per minute will not be available till the next dry season; but the addition of even the first half in October will be most desirable, as the want of sufficient water is already sensibly felt on the Babu hauling machine.

The gold troop will start on the 14th inst.; remittance, after payment of the duty of the duty of 5 per cent., will be 35,950 oits. of gold.

Oct. 8.—Produce for September, 19,772½ oits. = 189,955 oits. per ton—viz.: 19,656 oits., from 5371-2 tons of ore, yielding 3-65 oits. per ton; 92 oits., from the launders and flooring of the Warre stamps; 244½ oits., tribute from Feixos Mine = 19,772½ oits. Stamps working during the month, 76-4 heads, besides 14-5 heads of the new sides of the Powles' stamps, working three days.

**Powles' Stamps.**—You will see, by my diary, that the second side of these new stamps went to work on the 29th ult.; but, owing to the temporary deficiency of water, at first with only 15 heads, which, subsequently, fell away to 12 heads, and the entire 18 heads are now at work, there is a consequent diminution in the speed, both of the Cotesworth and of the Lyon stamps; this, in convenience will, however, I trust, be but of a temporary nature, and is, at all events, not likely to continue after the completion of the new fan bellows, which has been just commenced, and which is to be worked by the wheel of the Susannah stamps.

**Amalgamation House.**—A soon as the Powles' stamps were finally set in motion, nearly the whole force of mechanics, which had been previously employed thereon, were turned over to the amalgamation house, where the new machinery required was far more extensive and complicated than at the commencement I had been prepared to expect. I have now every reason to hope that the whole of the new machinery will be at work in the course of this week; but though we shall thus be enabled to keep pace with the increased quantity of auriferous sand now likely to be furnished from the stamps, we shall still have a great deal to do, both at the new stamps and at the amalgamation house, before they are completely finished. At the Powles' stamps, roofs are to be erected over the streaks, as well as over the passes at each side of the wheel, and, subsequently, I contemplate enclosing the Powles, Cotesworth, and Lyon stamps in one extensive circle of lofty palings, in which all the people required for working them will be locked up every night. The amalgamation house will be surrounded by a similar enclosure, to be locked up at night, so as to prevent, as far as possible, any improper tampering with the amalgam.

Cost for Sept., Rs. 38,032 £81, exchange 23½d. = 3605 £2s. 8d.—Produce, 19,772 oits.; less duty, 7 per cent., 1384 oits.; net, 18,388 oits., at 7s. 7d. = 6972 £2s. 4d.—Profit, 3366 £13s. 8d.

Sept. 18.—Gold extracted to date, 5315 oitavas, from 307-58 cubic feet of sand, being the produce of 10 days' stamping = 17-28 oitavas per cubic foot.

Stamps working 17 days, average 76-79 heads. The board will recollect that the experimental five-head stamps were stopped some time ago; latterly, the Warre stamps were able to work but three heads very slowly, and that only occasionally, in consequence of the gradual falling-off in the supply of water. Since the beginning of this month they have entirely ceased working, so that the total number of stamps now available is only 78 heads. Supply of stone good, and of fair average value; it would have been more abundant, but for the prevailing influenza sending so many borers into the hospital.

Sept. 28.—Gold extracted to date, 11,891 oits., from 629-68 cubic feet of sand, = 18-1 oits. per cubic foot, being the produce of 20 days' stamping. The first 10 days produced, as per my last, 3515 oitavas; second ditto, 5576 oitavas = 11,891 oits.—Stamps working 27 days, average 76-52 heads.

By the stoppage of the Powles stamps the greater part of yesterday, to make some repairs at the wheel-pit, and again for two or three hours to-day, to put on the pinion-wheel at the new side, there must result a further diminution of this month's produce; but, on the other hand, as I expect to get the additional 18 heads of the Powles stamps to work to-morrow, although for the present only on "lupa," or rejected stone, I hope they will by the end of the month enable us to compensate for this last loss, and, by the end of October, to repair the more serious loss which occurred on the first 10 days of this month. The supply of stone continues steady, and has hitherto enabled us to pick it to a moderate extent, though I fear that, on the remainder of the Powles stamps getting fairly to work, we shall be compelled to give over picking until the boring force can be further increased. The present heavy sick list abstracts between 70 and 80 men from the mine force.

**New Water-course** (in aid of the Bananal rego).—You will perceive, by my diary of the 25th, that we are now deriving some assistance from this work. There were two small streams to be thereby brought into connection with the Bananal rego; of these one is now brought home, the other cannot be rendered available till the next dry season.

#### MINING NOTES.

[EXTRACTS FROM OUR CORRESPONDENCE.]

**EAST WHEEL JOSIAH MINE (LATE CREASE).**—The lode recently discovered is producing some beautiful yellow ore, and has with it a splendid gossan, Maria-like, and bids well, being only now 6 fms. from surface.

**MINERAL COURT TIN MINE.**—This mine is situated in the granite district of St. Austell, and a prospectus for re-forming the company, which is now before us, states that, previously to 1847, the works were confined to driving an adit on the course of the main lode, and opening adit shafts, and effected at a cost of about 1000 £. In September, in that year, the present adventurers resumed working the mine; they have erected 34 stamps heads, a 36-in. cylinder engine, capable of draining the mine to 40 fms. below adit, extending adit, sinking engine-shaft, and other works, to an extent of 1200 £, making a total expenditure of 2200 £. About 200 £ worth of tin has been raised from the 8 ft. level—that the lode there is more productive in the bottom than at the back, and in some places rich—that this mine, like numerous others, for the last nine months has been in a depressed state, and from non-payment of calls, and other circumstances, it was suspended in May last. It has, however, been partially worked since on tribute, at a small profit, and the worth of the lode thus established. The present proprietors consider, that as the price of tin is 6 £ per ton in favour of the adventurer over the price in May last, there is encouragement to explore at deeper levels; and it is, therefore, proposed to fill up the vacant shares to the original number (256), and introduce new shareholders, who are to pay 4 £. 4s. per share, as their contribution towards the previous outlay; and the amount thus raised will be applied to sinking engine-shaft, purchase of pumps, and opening of the lode at deeper levels. The agent reports, from the appearance of the lode in the present level, it is only fair to presume that, at the next deeper one, it will set at from one-third to one-fourth tribute. He states that there are several promising lodes in the set—that the tin is so pure, and so free from arsenic, sulphur, &c., as not to require burning. The set is 924 fms. on the course of the lodes, and 450 fms. in breadth—is held for a term of 21 years, at 1-15th dues, and the adventurers have the promise of an adjoining parallel set.

**WILLIAM AND MARY WORTH MINE.**—This set comprises the Wheel Brothers and Silver Valley sets, bounded on the west by East Cornwall and Callington Bottom sets, south by Wheel Mexico, and extends north of the turnpike-road 100 fathoms, being situate within three miles of Cotehele and Calstock quays. A lease has been granted for 21 years, at 1-14th dues for silver ores, and 1-16th for tin. The operations have hitherto been confined to clearing up the old workings, and it is contemplated that ground may be worked away for the next two years without the application of machinery. The deep adit has been driven 150 fms. west on the course of the lode, and which is 33 fms. from surface, the backs being unexplored; and, judging from the large returns made in the previous working from shallow depths, it is considered that this portion of the set alone holds out great promise. It is accordingly proposed to drive two shallow levels above the deep adit on the course of the lode, the upper being driven in the gossan, and the lower at 10 fms. above the present, the cost of which, so as effectually to prove the ground, being estimated at 500 £. The Wheel Mexico cross-course, from its bearing taken in that mine, forms a junction with the lode near Oak shaft, from which, judging from the former workings, good results may be anticipated. It is further proposed to drive on the course of one of the tin lodes, which it is considered will, with materials and sundry other charges, involve an outlay of 524 £, or in all 1024 £, being after the rate of 1 £ per share. The surface erections include engine-house, calcining furnaces, smithy, count-house, &c.; whilst the halvans are estimated at 800 £, which can be returned on the erection of stamps, at a cost of 50 £. The shares are proposed to be issued at 1 £ per share, as purchase money, with the amount required for the active prosecution of the mine, 2 £ per share.

#### MINING IN THE TAVISTOCK DISTRICT.

[FROM A CORRESPONDENT.]

In this neighbourhood, we have every appearance of many good and lasting mines, which will benefit the working man, and give good dividends to those spirited individuals who have carried out these works during the great depression which has reigned in the mining world during the past year. On looking around, we find the late Wheel Elizabeth (now East Josiah) working for the third time, under very favourable circumstances. In driving the deep adit, they have intersected a lode which has never before been seen; this lode is large, and producing good stones of gossan and mundic, precisely the same sort which has been found in the Maria and Josiah Mines of the Devon Great Consols; this lode has been considered by most practical miners—men of some standing in mining science—to pass through this set, and there appears little doubt of the lode discovered being the Devon Great Consols; of course the result will be better known at a greater depth, whether it will be so rich in mineral productions as it is in the set adjoining. This set is, we believe, in Lord Courtenay's land, and the only one eastward which is to be had for mining purposes, the other land belonging to his Grace the Duke of Bedford. The promising mine of Rix Hill is past a doubt—making a profit on her monthly cost; Anderton is in the same position. At Wheel Friendship (a mine which has paid 360,000 £ profit), on a little north of this set, we find the greatest activity and bustle prevailing; lots of water, bringing in water-wheel, pit and shaft-sinking, preparing with all possible speed to get it into active operation; they are sinking the shaft, which is of immense size, and producing large rocks of the most splendid gossan; this set, which contains the Great Wheel Friendship cross-course, and the Wheel Betsy Silver-Lead Mine, is taken up by a few highly influential gentlemen—Sir A. Buller, J. H. Hitchens, Esq., and others, likely to give it a fair trial. The managing agent is J. H. Hitchens, Esq., and the resident agent, Capt. A. Barratt, a man of considerable experience.

[From the Plymouth Journal.]

**HAWKMOOR.**—The appearances here indicate a good mine; the lode, as far as it has been seen, is regular; the ore with some fluor-spar is 3 ft. wide, and of good quality. The water is quick, which involves the necessity of putting in a larger list of pumps.

**LANHERMOOR WHEEL MARIA.**—This mine has been at work some years, and as yet no important discovery has been made; there are several lodes in the set, and it is in contemplation to intersect these by a cross-cut from the engine-shaft in a 50 ft. level.

**HEIGTON DOWN CONSOL.**—The lode, which was from its indications at first considered to be tin, bids fair to be productive for copper in depth, and holds out, from its indications and locality, every inducement to the adventurers to give it an effectual trial.

**CALSTOCK UNITED TIN.**—Under this name the Harrowbarrow Mines have been resumed. Several small parcels of tin raised on tribute have realised good prices.

**DEAKS WALLS.**—A considerable number of hands are employed here, particularly on the eastern part of the mine, which will materially increase the returns of tin, and there is reason to expect that this mine will reassume its ancient position as one of the leading tin mines.

**WHEEL CALSTOCK.**—The tribute pitches are turning out a good pile of copper ore. The lode in the deep adit is very large, and consists of mundic, fluor-spar ore, and pyrites, the cross-cut to intersect a north lode, which in the adit pits was 7 ft. wide, and consists of fluor-spar, mundic, and gossan, is progressing favourably.

**KITT HILL.**—This mine has been resumed. There are in the set many lodes, chiefly of tin, which is very rich in quality. It has been repeatedly wrought, and as frequently abandoned for want of funds to prosecute it to a sufficient depth. A windmill was erected to draw the tinstuff and water, the only one which has been applied to this purpose. The indications warrant a vigorous prosecution of the mine.

**WHEEL ASH.**—This course of mundic continues without alteration.

**WHEEL ANDERTON.**—The lode in the eastern levels is producing a considerable quantity of tin of excellent quality; the western ground is also good, and there is every prospect of increased returns.

**EAST CROWDALE.**—A further improvement is reported in the Rix Hill lode.

**PLYMOUTH WHEEL YEOLAND EAST.**—The end is at present choked by a run, which is somewhat difficult to clear.

**PLYMOUTH WHEEL YEOLAND.**—The new south lode is a little improved since our last. The south adit is progressing satisfactorily. The cross-cut from the 34 ft. level has been driven 4 fms. towards the old south lode, and that lode will, there is every reason to believe, be cut within the time mentioned in the captain's report to the general meeting held on the 16th inst.

**WHEEL FRANCO.**—The lode is not cut in the 62 ft. level, but the top of the end is letting down less water than it did. There is no change in the other parts of the mine.

#### EAST WHEEL FRIENDSHIP MINING COMPANY.

SIR.—Can any of your readers inform me if it is the intention of the company to commence operations, and at what period?—or whether the speculation may be considered a failure, in consequence of the share list being insufficiently filled?—and, if so, are the adventurers to be furnished with any account of the expenditure?—AN ADVENTURER: Salisbury, Nov. 28.

#### CASCADE MINING COMPANY.

SIR.—I cannot imagine why you should have taken upon yourself to erase from my last week's letter, the most material and important paragraph contained in it—namely: "That the gentlemen, who, on the 13th inst., passed the resolution, appointing me the purser of the mine, were, to a man, the same who, at Mr. Nicholas Truscott's suggestion, refused to confirm it on the 16th," though "the accounts of the mine had not been before them for three months." Trusting that you will do me the bare and tardy justice of supplying the omission by inserting this letter, I remain, yours, &c., T. H. TAUNTON.

#### GADAIR MINING COMPANY.

SIR.—I much regret that, owing to the length of my letter, and the late hour at which it reached you, its insertion last week was unavoidably postponed. I now send it to you in a more condensed form, and, early enough, I trust, to secure its appearance in this week's Journal. In your report of the proceedings at the meeting of Gairair shareholders, held at the Queen's Arms, on the 16th inst., occurs the following inaccuracy. The honorary purser stated, in as many, and the same words, that I had "applied for the Gairair set for myself." In the report before me, the application is said to have been made with a view of "obtaining a fresh grant for other parties;" now, by many of your readers, this may be thought to be a distinction without a difference; but I recognise in it a most material difference, though its showing is quite unnecessary for my vindication, inasmuch as both the mind and the statement reported, are equally untrue. I never stipulated, directly or indirectly, for a fresh grant either to myself or other parties, nor any part of my correspondence with Mr. Ellis be tortured into such a signification. The grounds of my suggestion for a declaration of forfeiture by the lord were simply these:—I attended the previous meeting, held on the 26th October—not as a shareholder, it is true, but on behalf of my brother and a friend, each of whom had paid his 50 £. for the 35 shares he held, and the former his calls into the bargain. I took no part whatever at that meeting, beyond raising my voice against the preposterous interest represented by the "free shares," though this remonstrance was, in the report, attributed to Mr. D. L. Williams, whilst the indefensible proposition for enforcing the calls was very kindly furnished to me. In the course of the meeting, on some letters from Mr. Mackillop being read (the import of which will be understood by referring to the last report), Mr. James Truscott asserted that Mr. Mackillop not only had no claim to his shares, but that he never had a lease; nor, consequently, any title to the mine. Now, knowing as I did, that Mr. Mackillop alone held the legal and equitable interest in this mine at the time of his treating with Mr. Truscott for its disposal; that he was moreover possessed of an unexpired lease with Mr. Truscott for its disposal; and the statement reported, as equally untrue, that I had yielded the surrender of which was insisted upon by the lord before a fresh one (for a longer term, and at a reduced royalty), would be granted; and knowing, further, the infinite personal trouble and expense to which Mr. Mackillop had been put, in collecting evidence necessary to constitute the surrender a legal one, I did, I must confess, feel astounded at Mr. Truscott's assertion. Compiling this, with even still stronger reasons for my interference—namely: the appropriation of the "free shares," and the infamous use made of them—I determined forthwith to put myself into communication with the lord's agent. And now, Sir, connecting your report of the Gairair with that of the Cascade, held on the same day (and which is noticed by me in another letter), I cannot but feel that you have placed my conduct in the worst possible light in which it could be made to appear, else why should a comparison be instituted between my letter to Mr. Ellis, which had never been seen, and his reply, which was read, and in which, by the lord's desire, he expressed his obligations "for my very candid letter, in at once informing him of the present unfavourable position of the company."—Will any of your numerous readers discover in this a "gentlemanly rebuke," as you are pleased to term it? I now proceed to answer the observations applied to me by Mr. Moss, in his capacity of solicitor to the British Mining Office. I will first ask this gentleman, how he became the solicitor also for the Gairair Mining Company? Was it a piece of jobbing, or was it not? Had not a most highly respectable firm undertaken this trust, entered upon its duties, and discharged them with punctuality and good faith; when, without any assignable cause that I ever heard, they were superseded by Mr. Moss, who received, with the honour of this appointment, a present of 50 free shares in the Gairair Mine? Mr. Moss has charged me with a breach of good faith, and, by implication, with the blackest ingratitude, in having endeavoured to injure a company in whose service I had been employed, and whom I had sworn to defend. Doubtless, this would be a grave charge, if it could be supported; but, unfortunately for Mr. Moss's assertion, I have not eaten a crumb belonging to the British Mining Office, but rather the substance of my own family and friends, whose money (to the amount of nearly 1000 £), has been received by the British Mining Office, and converted to their own use. I say, without fear of contradiction—and I challenge any member of that proprietary to deny my statement—that of the eight gentlemen composing the British Mining Office, not one ever expended a single shilling out of his own pocket, either for defraying the current cost of the establishment, the payment of salaries, or for any other purpose whatever in connection with it, and the mining interest which they had engaged themselves to protect. Not satisfied with this, they have actually debited the mines with amounts, with which, in common honesty and justice, they should have debited themselves; and, if required, I am prepared, *seriatim*, to specify the amounts, with the respective items so charged. I did bring some before the meeting of the Cascade shareholders, but was answered by a member of the late British Mining Office, that "those accounts had been audited and passed, and there was an end to them." There was, I feel assured, two or three members of the British Mining Office, how he became the solicitor also for the Gairair Mining Company? Was it a piece of jobbing, or was it not? Had not a most highly respectable firm undertaken this trust, entered upon its duties, and discharged them with punctuality and good faith; when, without any assignable cause that I ever heard, they were superseded by Mr. Moss, who received, with the honour of this appointment, a present of 50 free shares in the Gairair Mine? Mr. Moss has charged me with a breach of good faith, and, by implication, with the blackest ingratitude, in having endeavoured to injure a company in whose service I had been employed, and whom I had sworn to defend. Doubtless, this would be a grave charge, if it could be supported; but, unfortunately for Mr. Moss's assertion, I have not eaten a crumb belonging to the British Mining Office, but rather the substance of my own family and friends, whose money (to the amount of nearly 1000 £), has been received by the British Mining Office, and converted to their own use. I say, without fear of contradiction—and I challenge any member of that proprietary to deny my statement—that of the eight gentlemen composing the British Mining Office, not one ever expended a single shilling out of his own pocket, either for defraying the current cost of the establishment, the payment of salaries, or for any other purpose whatever in connection with it, and the mining interest which they had engaged themselves to protect. 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## CORNISH TIN SMELTERS.

Sir.—A matter of congratulation is at this moment exercising its potent influence in Cornwall, and with just cause and reason; for monopoly has long enough been the bane of tinners in this county—at the mercy of tin smelters, and with hands fettered, tin mines have sunk beneath its pestiferous sway. But why this snug monopoly? Why not more capitalists as smelters?—It may seem strange that, with such enormous gains as tin smelters must realise, numerous capitalists have not embarked their moneys and abilities in so fine a prospect—I may say, in such a certainty. However, we must look back, and consider the great and illegitimate run after railway shares and railway property; thousands of shares were taken and appropriated, under the idea of selling them again, which was the means of bringing upon hundreds ruin and bankruptcy. Had they not run this race, but appropriated shares in tin smelting property, then the miner and smelter would alike have been benefitted from the competition which would necessarily have followed. The gratulation just referred to would then have occurred many years since, and thousands of men, women, and children, who for many winters past have wanted the necessities of life, would now be happy and contented. I have heard it said, that unless an immense capital can be obtained, nothing can be done either in the tin or copper trades—somewhere very deep in hundreds of thousands, if not millions. Presuming this to be correct, is it, or rather was it, not better to invest money in this market, where profits are regular and certain, than in unhealthy and exciting markets? The demonstration is apparent. May those gentlemen now coming into the tin trade be successful, is the earnest wish and hope of all tinners in Cornwall; and may that tide of speculation again flow into Cornwall which has been so long withheld from it. Previous to this move (in three new tin smelting establishments in Cornwall), the smelters then in the market informed our tinners, that the French revolution, and the immense sale of tin in Holland from Banca and the East Indies, was the means of the great depression in its price. But, Sir, notwithstanding there is a possibility of another rupture in France, in consequence of the friction of parties during the election for president, and that the immense sale in Holland has passed, thereby, of course, throwing enormous quantities of this metal into our markets, out come the would-be monopolists boldly, and say, "We will give you equal, if not better, prices than the new houses." Nothing clearer proves the enormous gains of the tin smelters, and the crushing and grinding of the poor tinner. This is not slander, but facts. Now, they say, in justification of such prices, that refined tin is much wanted. It is remarkable, by the way, that this spirit should come over them just at this particular time. No, Sir; it is but their application of the crushing system into another channel—"As we have ground the tinner, so will we grind the new companies." After every consideration, Sir, is it great presumption to interfere with our Cornish Croesuses, knowing, as the miners do, that the smelters' liberality extends to where they can gain most by you? A fine opening this for gratitude!

These new companies deserve much from the miners in Cornwall and Devon: their coming now into the market, we trust, is but the harbinger of better days. They have a broad field before them. From the bubble-boy, ranging up to the adventurer, all will and must be benefitted by their appearance. Their success is our success.—ANTI-MONOPOLIST: St. Agnes, near Truro, Nov. 24.

## REAL DEL MONTE MINING COMPANY.

Sir.—Although not connected with the Real del Monte, or any other mines in Mexico, I have still, for some years past, taken a considerable interest in the practical working of those mines; and, after fully ascertaining the method of working them, my only surprise has been that the companies could exist—the dissolving of the above-mentioned company came, therefore, as quite a matter of course. From your valuable Journal, I learn, that a new company is in formation to buy in the plant and machinery, and work those mines again; this will, no doubt, prove a good investment, even if the new company continues to work the mines and beneficiate the ore in the same manner it has been done hitherto, and has been since the old Spaniards first invaded Mexico; because the cost of the machinery will be less; and the shareholders, having less hope of large dividends, will insist upon an economical mode of direction. But how much larger might those returns be, if the company would adopt and introduce such improvements as would lessen the expense of extracting the silver to one-quarter or one-half, and in one-quarter the time. You state, that practical men in Mexico consider it necessary that another hacienda should be established before the mines could be worked with advantage: another hacienda, forsooth! As if they had not enough of them: one of those they have got would be sufficiently large to beneficiate all the ores the Real del Monte mines produce, provided a proper system is pursued.

But what can be more ridiculous, than to see ores imperfectly ground, with the most barbarous machinery ever invented, and then mixed up with mercury, and spread over an enormous surface; and seeing men, with naked feet, all day long, for weeks, treading this ore, to get the silver and mercury to amalgamate, as if no other heat than the heat of a human being's foot is capable of being used, and no other less expensive method could be resorted to to triturate the ores. The Freyberg barrel system, although very imperfect, is still an improvement, and has been partly tried at some mines, but with what degree of success can be guessed at, when "a great many practical men" propose to make an entire new hacienda. Heat is the great agent in all chemical processes; why, therefore, not employ it, without, of course, having recourse to smelting? Should a new company be formed out of the wreck of the old, it is to be hoped that men who thoroughly understand their business will have the management of the affairs in Mexico, and not a chairman in London, who never saw a mine; or a secretary, who has only studied, but not applied, chemistry.—T. A. E.: London, Nov. 20.

## GADAIR MINING COMPANY.

At an adjourned meeting of shareholders, held at the Queen's Arms Hotel, Cheapside, on Thursday, the 30th November—W. SMALL, Esq., in the chair—the honorary PURSER, upon the opening of the proceedings, stated that, in consequence of representations made by two members of the committee that the meeting had been proposed to be adjourned until the 14th December, a correspondence was in course with the lord, as regards the mine not being in active work.—MR. MACKILLIP stated, that he had come from Liverpool expressly to attend the meeting, in accordance with the adjournment which had taken place; the specific object of the meeting being to consider the position of the circumstances connected with the formation of the company. He regretted there had not been a fuller attendance; and, perhaps, under all circumstances, and from the explanations afforded by the hon. purser, it might be well to adjourn the meeting, as proposed, until the 14th December.—At the same time, the hon. PURSER explained, that one of the committee had proceeded to Manchester, with the view of making arrangements, which he doubted not would be satisfactory; and that, antecedent to the proposed adjourned meeting, communication would be made with Mr. Mackillip, whose claim he understood to be perfectly recognised by the adventurers.

## WHEEL TREHANE MINING COMPANY.

At a general meeting of adventurers, held on the 23d Nov., the accounts for July and August were presented, showing—Balance to date, 1891. 1s. 7d.; sale of lead ores, 1189. 3s. 6d.; materials, &c., 21. 8s. 8d.; 1892. 1s. 3d.—By labour cost and materials for Aug. and Sept., 622. 11s. 9d.; Trelawny adventurers, for use of engine and water, 33.; lords' dues on ore sold, 77. 1s. 8d.; by dividend declared Sept. 21, 256.; leaving balance in favour of adventurers, 594. 2s. 4d.—The accounts having been allowed and passed, a dividend of 25s. per share was declared. Mr. Sambell and Captain Bryant were appointed auditors. The following report, from Capt. S. Richards, was read to the meeting:—

Nov. 28.—Kelly's shaft is down 3 fms. 6 in. below the 55 fm. level; the ground is much improved, and is now favourable for sinking. The lode in the 55 fm. level north is 2 ft. wide, and worth 7 cwt. of lead per fm.; in this level south the lode is worth about half-a-ton of lead per fm.; the lode in the back of this level is turning out very well. The lode in the 45 fm. level north is still improving in size and quality; it is now 24 ft. wide, and worth from 4 to 5 cwt. of lead per fm.; the lode in the back of this level continues to produce about 9 cwt. of lead to the fm. In the lode in the bottom of the 30 fm. level north, the lode is turning out tolerably well; there is no alteration of importance in the cross-cut driving west at this level—ground still favourable. In Kelly's field we have found, in costaining, small branches, but cannot say that they are of much importance since last report. We sampled, on Saturday last, 73 tons of rich quality ore, to be sold on the 28th instant.

CARADON UNITED.—At an adjourned meeting of adventurers, held at the offices, St. Michael's Alley, Cornhill, on Thursday, the 23d Nov. (it appearing from the accounts that a call of 2l. per share on the solvent shares would be required to pay off the liabilities of the mine), it was resolved, that a call of 2l. per share be made payable immediately to the London Joint-Stock Bank—that a copy of the report of Capt. Penrose be sent to Mr. J. H. Hitchens, of the Devon Great Consols—and that he be requested to inspect the mine, advise as to sinking 10 fathoms deeper within Captain Penrose's estimate, and whether advisable to continue the mine—that the meeting adjourn to 15th of December next, to receive Mr. Hitchens's report, and determine thereon.—The holders of 13 shares having given notice of abandoning them, it was resolved, that they be requested to sign the usual form of relinquishment, and forward the same on or before 15th of December next, with any arrears of calls due—and that such relinquishment be taken in lieu of the call of 2l. now made as the proportion of liabilities incurred.

GREAT HEWAS CONSOLS.—At a meeting of adventurers, held at Pearce's Hotel, Truro, on Wednesday, the 23d Nov., the accounts were examined and passed, showing a loss for the months of Aug. and Sept. of 309. 7d. It was resolved that, for the purpose of assisting in liquidating the outstanding liabilities, the purser, Mr. Pearce, be authorised to make an immediate call of 5l. per share—that, for the present, the engine be suspended from working, and that further cost at the mine cease—and that the purser be authorised to dispose of the mine and materials; the advertisement of which appears in another column of this day's Journal.

TREHAVEN.—At a meeting of adventurers, held at the mine, on the 28th November, a statement of accounts was produced, showing—Labour cost for September and October, 1890. 12s. 2d.; merchants' bills, 618. 12s. 6d.; 2156. 4s. 4d.—Copper ores sold August and September (less lords' dues, 94. 1s. 8d.), 1787. 18s. 10d.; by sundry credits, 219. 14s. 8d.—2007. 8s. 1d.—Balance in hand, 821. 2s. 3d.

WHEEL MARGARET.—At a meeting of adventurers held at Halesdown, on the 28th Nov., a statement of accounts for three months, ending September, was presented, showing—Labour cost, and carriage, 1917. 16s. 2d.; coals, 155. 1s. 6d.; merchants' bills and lords' dues, 761. 9s. 8d.—2884. 7s. 3d.—By tin sold, 4252. 1s. 2d.; showing profit, 1417. 13s. 11d.; balance from last account, 159. 6s. 11d.—4571. 0s. 10d.—By dividend of 12s. per 12th share, 1344. 1s. leaves present balance, 2271. 0s. 10d.

[Abstract from the Cornish Engine Reporter, from Oct. 20 to Nov. 20, 1891.]

| PUMPING-ENGINES.   |                              |          |      |
|--|------------------------------|----------|------|
| Number reported  | 24                           |          |      |
| Average load per square inch on the piston, in lbs.  | 12.5                         |          |      |
| Average number of strokes per minute   | 5.3                          |          |      |
| Gallons of water drawn per minute  | 4373                         |          |      |
| Average duty of 16 engines—being million lbs. lifted 1 foot high, by the consumption of 1 cwt. of coal | 64.9                         |          |      |
| Actual horse-power employed per minute   | 845.8                        |          |      |
| Average consumption of coal per horse-power per hour, in lbs.  | 4.1                          |          |      |
| ROTARY-ENGINES—WHIRLS.   |                              |          |      |
| Number reported  | 10                           |          |      |
| Number of kibbles drawn  | 71,133                       |          |      |
| Average depth of drawing, in fathoms   | 131.7                        |          |      |
| Average number of horse-whim kibbles drawn the average depth, by consuming 1 cwt. of coal              | 51.6                         |          |      |
| Average duty of 12 engines, as above   | 16.0                         |          |      |
| STAMPS.  |                              |          |      |
| Number reported  | 6                            |          |      |
| Average number of strokes per minute   | 14.1                         |          |      |
| Average duty of 5 engines, as above  | 32.3                         |          |      |
| Horse-power employed   | 104.9                        |          |      |
| PUMPING-ENGINES DOING HIGHEST DUTY.  |                              |          |      |
| Fowey Consols.   | 80-inch single               | Millions | 96.4 |
| Par Consols  | 72 & 35-inch Sims's combined |          | 94.5 |
| Great Polgoth.   | 80-inch single               |          | 90.7 |
| Par Consols  | 80-inch single               |          | 9.0  |
| Callington   | 60-inch single               |          | 6.7  |
| Trelawny   | 50-inch single               |          | 6.7  |
| WHIM-ENGINES.  |                              |          |      |
| Par Consols.   | 24 & 13-inch Sims's combined | Millions | 27.0 |
| Fowey Consols.   | 22-inch double               |          | 24.7 |
| Fowey Consols.   | 22-inch double               |          | 24.2 |
| Great Polgoth  | 22-inch double               |          | 18.5 |
| STAMPING-ENGINES.  |                              |          |      |
| Tamar  | 30-inch single.              | Millions | 44.1 |
| Tinctor  | 30-inch single.              |          | 38.5 |
| South Caradon  | 26-inch double               |          | 31.7 |

## FLUCTUATIONS IN THE STOCK AND SHARE MARKET DURING THE MONTH OF NOVEMBER.

| Stocks and Shares.       | Share.    | Paid.    | Pr. Nov. 1. | Highest. | Lowest. | Present. |
|--------------------------|-----------|----------|-------------|----------|---------|----------|
| Consols                  | —         | —        | 85½         | 87½      | 85½     | 87½      |
| Exchequer Bills (June)   | —         | —        | 42s 6d      | 44s 6d   | 42s 6d  | 44s 6d   |
| RAILWAYS.                |           |          |             |          |         |          |
| Blackwall                | £13 6s 8d | 13 6s 8d | 4½          | 4½       | 4½      | 4½       |
| Brighton                 | Stock     | 50       | 27½         | 29½      | 27½     | 28       |
| Birmingham and Oxford    | 20        | 20       | 23½         | 24       | 23½     | 24       |
| Caledonian               | 50        | 50       | 19          | 20       | 18      | 19       |
| Eastern Counties         | 20        | 20       | 13          | 13½      | 11½     | 11½      |
| Great Northern           | 25        | 19       | 5½          | 6        | 4½      | 5½       |
| Great Western            | 100       | 90       | 78          | 83       | 74      | 74       |
| London and North-Western | 100       | 100      | 116         | 119½     | 114     | 117      |
| Midland                  | 100       | 78       | 84          | 84       | 75½     | 77       |
| North Staffordshire      | 20        | 15       | 8½          | 9½       | 8       | 8½       |
| South-Eastern            | £33 2s 4d | 33 2s 4d | 33½         | 34½      | 31½     | 32½      |
| South-Western            | Stock     | 50       | 40          | 42       | 37½     | 38       |
| York and North Midland   | 50        | 50       | 50          | 53       | 47      | 48       |
| Boulogne and Amiens      | 20        | 20       | 6½          | 6½       | 5½      | 5½       |
| Northern of France       | 20        | 12       | 6½          | 6½       | 5½      | 5½       |
| Paris and Lyons          | 20        | 11       | 5           | 5        | 4½      | 5½       |

The above is a table of the stock and share fluctuations during the past month. Under the influence of an abundance of money, and the reduction of the rate of discount by the Bank, which took place on the 2d inst., Consols, it will be observed, have advanced nearly 2 per cent. Railway shares, on the other hand, in most cases, again show a decline.—Times.

THE GOLDEN DREAM OF THE AMERICANS.—A correspondent writes—"The California gold-finding scheme turns out to be a hoax. The imaginary gold is but a very common valueless mineral, yellow mica. Many of our early voyagers were deceived in the same way."

STEAM-CARRIAGES ON TURNPIKE ROADS.—We are glad to learn, that an influential party are now preparing to form a company, for the purpose of affording Sir James Anderson an opportunity effectually to try his improved steam-carriage, and that a full report, by an experienced engineer, on steam-carriages as compared with Sir James's, will shortly be made public, together with a prospectus for forming the contemplated company, on a scale of magnitude equal to its importance.

LONDON AND NORTH-WESTERN RAILWAY.—The Euston station, which has been recently completed by Messrs. Braune and Gwyther, of Birmingham, at a cost of about 150,000l., is situated between Seymour-street and Whittebury-street, and comprises an area of about 2100 feet in length, by 500 feet in breadth. On either side is a platform; the one on the east side, or the arrival platform, is 1100 feet in length, and about 40 feet in width; and the departure platform is about 800 feet in length. In this space on the various lines there are 60 turn tables, and over this are about 700 feet by 350 feet of glass roofing. There are also 16,000 feet of drains and sewage, which have been constructed under the direction of Mr. M. A. Watkins. On the west side, adjoining Cordington-street, a number of coach factories have been erected, the area occupied by these being 300 feet by 400 feet. A smithy, with every convenience for the manufacturing of vehicles, is attached. In the course of the past week the waste materials which were not required by the contractors were sold, and realised nearly 1000l.

THE PROPOSED AMALGAMATION OF THE GREAT COMPANIES.—From a published circular addressed to the shareholders of the London and North-Western Railway, it appears that the negotiations for a junction of the three great companies, which have been pending for some time, has proved abortive. The Morning Chronicle gives the following résumé of the affair:—"The point upon which the contracting parties split, was as to the representation of the respective interests of the united executive body to be appointed under the proposed Consolidation Act. Among the resolutions considered at the conferences held between the deputations from the three boards, there was one, the eighth, which the North-Western representatives insisted on specially reserving for the decision of their directors. By that article it has been proposed that, in any united board to be created under the Act, each of the companies should, in the first instance, be equally represented in number. The North-Western delegates, as it is stated, from the first demurred to this proposition, alleging that their great preponderance of capital and revenue justly entitled them to an amount of representation in the united executive body to be appointed under the proposed Consolidation Act. The claim was objected to by the other deputations, but the negotiations went on provisionally, and the resolutions were signed, with the saving clause—suggested, as we are told, by the Great Western party, for the purpose of obviating the immediate difficulty—that they should be 'subject to the approval of the respective boards.' On the 11th inst., the proceedings of the deputations having been reported to the North-Western directors, that body came to a resolution by which the point reserved on the eighth article was decisively negatived. At the same time, in order to afford an opening for a fair compromise, the board expressed its readiness to leave the disputed question to the determination of a third party, in either of two ways—namely, by submitting it to the adjudication of the Committee of Parliament on the bill, or else to a process of arbitration. Both of these alternatives, however, have been positively declined by the other companies, and, consequently, the negotiations have terminated."

KINGSTOWN AND DALKEY ATMOSPHERIC RAILWAY.—In order to remedy the great inconvenience experienced by the inhabitants of Dalkey from the temporary suspension of the railway, owing to some necessary repairs being done to the engine, the directors have had one of their locomotives adapted to bring the train up and down as usual. The Princess engine has accordingly had her chimney cut down, so as to pass under the low arches and tunnels on this line, and a cover or shield has been placed over the engine, to guard against accident. The water tank has been lessened, so that it might pass over the tube, and other alterations have been made to guard against delay or accident. On Thursday the Princess made her trial trip, first with one and then with two carriages laden, and performed the journey most satisfactorily. It will be recollected that both curves and gradients are very severe on this line. The average gradient is 1 in 115, and in one part it amounts to 1 in 57. The sharpest curve has a radius of less than one-third of a mile. The car drivers took every advantage of this brief stoppage of the traffic, and insisted upon 8d. and 1s. each for conveyance to and from Dalkey and Kingstown. The railway will be opened in a few days.

## NEW PATENTS.

P. A. Lecomte de Fontenemoreau, Skinner's-place, Paris, for certain improvements in the processes of and apparatus for treating fatty bodies, and in the application of the products thereof to various useful purposes. (Being a communication.)  
J. Goacher, Woodstock, West Riding of York, agricultural machine-maker, for a machine for thrashing corn and other grain.  
J. Lane, and J. Taylor, both of Liverpool, engineers, for improvements in engines, boilers, and pumps in rotary carriages, in propelling vessels, in the construction of boats, in extinguishing fires, and in brewing.  
E. Schunck, Hochelme, Lancashire, chemist, for improvements in the manufacture of malleable iron, and in treating other products obtained in the process.  
W. R. Lomax, Banbury, Oxfordshire, engineer, for improvements in machines for cutting hay and straw into chaff, and for cutting other vegetable substances.

DESIGNS FOR ARTICLES OF UTILITY REGISTERED.  
J. Ashforth and Co., Sheffield, ratchet wrench or spanner.  
The Bromsgrove Railway Carriage Company, Bromsgrove, pipe-joint and fastening.  
Haldane and Roe, Edinburgh, tap or cock for drawing off liquids.  
J. Petrie, Rochdale, wringing and mangling machine.—Mechanics Magazine.

## AMERICAN DETRACTION OF ENGLAND—REMINGTON'S BRIDGE.

Accustomed as we are to the vagaries, mis-statements, exaggerations, and ridiculous bombast of the American press, more particularly when the slightest opportunity of vituperating England or Englishmen occurs, it was, we must say, with utter astonishment we read the following letter, which we extract from *Hunt's Merchants' Magazine*, professing to be an autobiographical notice of Mr. Remington's first few months sojourn in England. Few persons will read this disgusting mixture of untruths and contradictions without feelings of contempt for the writer, and pity that the free press of a free nation should be reduced to the degrading position of circulating such a mass of trash and fallacious detail as a *bona fide* narrative. Mr. Remington was well received here—we believe was never even really in poverty—had every opportunity readily afforded him to display his inventions, as the bridge in the Zoological Gardens fully testifies—a bridge, by the way, the principle of which, although ingenious, could never be applied to more than the spanning of brooks for foot passengers—heavy weights and railway vibration being entirely out of the question. The tale of the 10l. for 1s. to enter the gardens, while in a state of rags, and covered with filth, obtained from those whom he profanely terms "hell-born Jews;" his being allowed by Mr. Tyler, the proprietor, to sleep in his fifth in an "old lion's den," while he superintended the carpenters; and his subsequent braggadocio of the orders he has on hand, "if he chooses" to finish them; are, with the rest of the details, too preposterous to pay any attention to, and we, of course, take them, as usual, as a broad hoax of brother Jonathan. Should it, however, be possible to have been written by this Remington, the ungrateful fellow ought to be at once spurned from English society; and if he has gained the good opinion of the inhabitants of Stafford, we trust they will at once drive him from their locality with the most ignominious contempt, nor suffer their works and undertakings to be polluted by such demoralised agency. We leave the letter, however, to speak for itself:—

MY DEAR SIR.—I should have written sooner but that I had nothing pleasant to say. I reached London on the 1st of January, 1847, without money or friends, which was just the thing I desired when I left America, and just the thing, I assure you, I will never desire again. I commenced operations at once, and on the supposition that, in this overgrown city, I would at least enlist one man. But Englishmen are not like Americans, an Englishman would advance any amount on an absolute certainty, but not one penny when there is the slightest risk, if he got the whole world by it. I spent the first five months looking for this man with unparalleled perseverance and industry, living for less than 3d. per day. I am convinced that few persons in London know so much of that incomprehensibly large city as myself. But alas! my wardrobe was gone to supply me with wretchedly baked corn bread, on which I lived entirely. I slept on straw, for which I paid 4d. per night. I became ragged and filthy, and could no longer go among men of business. Up to this time my spirits never sank, nor did they then; but my sufferings were great. My limbs distorted with rheumatism, induced by cold and exposure—my face and head swelled to a most unnatural size with cold and toothache, and those who slept in the same horrid den as myself were wretched street beggars, the very dregs of the human race, and all manner of creeping things. But I was no beggar. I never begged, nor ever asked a favour of any man since I came to England. Ask George Bancroft, whom I called upon two or three times, if ever I asked the slightest favour, or even presumed upon the letter you gave me to him. I did write him a note, asking him to come and witness the triumph of opening the bridge at the gardens, and delivered the note at his own house myself; and although Prince Albert came, I never got even a reply to my note. If Bancroft had come, and been the man to have only recognised me in my rags as I was, it would have saved me much subsequent suffering. I will not believe that Bancroft ever saw my note, for his department to me was even king.

The succeeding three months after the first I will not detail, up to the time I commenced to build the bridge. I will not harrow up my feelings to write, nor pain your kind heart to read, the incidents of those 90 days. My hair turned grey, and I must have died but for the Jews, who did give me 1s. down for my acknowledgment for 10l. on demand. These wicked robberies have amounted to several hundred pounds, every penny of which I have had to pay subsequently; for, since my success at Stafford, not a man in England who can read but knows my address. It cost me 10s. to obtain the shilling with which I paid my admittance into the Royal Zoological Gardens, where I succeeded, after much mortification, in getting the ghost of a model made of the bridge. The model, although a bad one, astonished everybody. Every engineer of celebrity in London was called in to decide whether it was practicable to throw it across the lake. Four or five of them, at the final decision, declared that the model before them was passing strange, but that it could not be carried of a much greater length than the length of the model. I was standing amidst men to the supposed greatest talents as civil engineers that the world could produce, and the point decided against me. This one time alone were my whole energies ever aroused. I never talked before—I was hazy and faint for want of food—my spirits sank in sorrow in view of my mournful prospects—clothes I had none—yet, standing over this model, did I battle with those men. Every word I uttered came from my inmost soul, and was big with truth—every argument carried conviction. The effect on those men was like magic—indeed, they must have been devils not to have believed under the circumstances. I succeeded. My agreement with the proprietor was, that I should superintend the construction of the bridge without any pay whatever, but during the time of the building I might sleep in the gardens, and if the bridge should succeed, it should be called "Remington's Bridge."

I lodged in an old lion's cage, not strong enough for a lion, but by putting some straw on the floor it held me very well, and indeed was a greater luxury than I had had for months. The carpenters that worked on the bridge sometimes gave me part of their dinner. On this I lived, and was comparatively happy. It was a little novel, however, to see a man in rags directing gentlemanly-looking carpenters. The bridge triumphed, and the cost was 8l., and was the greatest hit ever made in London. The money made by it is astonishingly great—thousands and tens of thousands crossing it, paying toll, besides being the great attraction to the gardens. Not a publication in London but what has written largely on it. Although I never received a penny, or ever will, for building the bridge, I have no fault to find with Mr. Tyler, the proprietor, for he has fully done all that he promised—that was, to call it "Remington's Bridge." The largest wooden perhaps ever made in the world is made of the bridge; every letter of my name is nearly as large as myself. The bridge, to this day, is the prominent curiosity of the gardens. You cannot open a paper, but you may find "Remington's Bridge." Soon after it was built, I have frequently seen hundreds of men looking at the large picture of the bridge at the corner of the streets, and gazing at Remington, when I have stood unknown in the crowd, literally starving. However, the great success of the bridge gave me some credit with a tailor. I got a suit of clothes and some shirts—a clean shirt. Any shirt was great; but a clean shirt—O God, what a luxury! Thousands of cards were left for me at the gardens, and men came to see the bridge from all parts of the kingdom; but with all my due bills in the hands of the hell-born Jews, of course I had to sleep, and came to Stafford.

I first built the mill, which is the most popular patent ever taken in England. The coffee-pot, and many other small points, like exceedingly well. The drainage of Tall Malton is the greatest triumph I have ever yet had in England. I have never yet had a letter from Earl Talbot, a most majestic and wonderfully beautiful thing. Dukes, marquises, earls, lords, &c., and their ladies, are coming to see it from all parts. I have now more orders for bridges from the aristocracy than I can execute in 10 years, if I would do them.—Indeed, I have been so much among the aristocracy of late, that what with high living, being so sudden a transition from starving, I have been compelled to go through a course of medicine, and am just now convalescent. Of course, anything once built precludes the possibility of taking a patent in England, but its merits and value are beyond all calculation. A permanent, beautiful, and sturdy bridge may be thrown across a river half a mile wide, out of the reach of floods, and without anything touching the water, at a most inconsiderable expense. The American patent is well secured at home I know. I shall continue to build a few more bridges of larger and larger spans, and one of them a railroad bridge, in order that I may perfect myself in them, so as to commence fair when I reach America. I have a great many more accounts of my exploits since I came to Stafford, but must defer sending them until next time. I beg you will write me, for now, since a correspondence is opened, I shall be able to tell you something about England. I know it well, I have lived with earls, and from that down down down to where the knives, forks, and plates, are chained to the table for fear they should be stolen.

Stafford, England, August 15.

J. R. REMINGTON.

We know not which to admire most—the degraded mind of the man who could wallow in such filth as he describes, or his arrogance and bombast, when he is raised by Englishmen to so eminent a position, that he has orders enough to last 10 years, if he chooses to execute them. In the former case, there is not a "hell-born" Jew in this country than to whom, if he had applied, he would not have given him half-a-crown, and told him to go get dinner. Did he get into debt in London, and "slope" to get out of the hands of the sheriff's officers? For the character of human nature! for the character of the American nation (which is still disgraced by such publications) we trust the whole is a farce.

IMPORTANT TO THE COAL TRADE.—The Government of Cuba has published the following orders for encouraging the import of coal:—"Foreign ships which shall import, in coal, a number of tons superior to that carried upon their papers, shall pay only four reals (half a dollar) per ton of tonnage duty, and the charges of the captaincy of the port. Vessels which shall bring whatever other merchandise, in addition to the coal, shall forfeit all right to the above disposition. The entry of coal is free of all duty." In transmitting these regulations to his Government, M. Meert, the Belgian consul at Havana, remarks, that they may prove of advantage to Belgian shipping visiting Cuba to take in coals. He estimates that the saving upon the tonnage duties, for those which carried coal, would be equal to \$1 and 14 reals per ton. The consumption of coal in the island (he adds) amounted, in the year 1847, to 405,400 quintals; but the rapid waste of the woodlands in the interior, joined to the increase of steam navigation, and the use of steam-engines on the railroads, in the sugar works and industrial establishments, must rapidly augment the consumption. The average sale price of coal during the present year has been \$6 the ton (say, about 25s. 6d.), to which add the economy on the tonnage duties as now ordered, and the gross product would be \$7 14 reals per ton—a rate of return which he deems satisfactory, and which circumstances might improve. The consul communicates also important information, it is said, about the import of iron and nails into Cuba; but this is not given as an official communication to the public, but has been laid before the Chambers of Commerce of Liege and Charleroi.

CHESTER AND HOLYHEAD RAILWAY.—The Carnarvon tunnels, on the contracts between Conway and Banger, are being arched over with brick in a most effective and superior manner. It was at first thought that the rocks, through which they had been cut, would not require this precaution; but various falls having taken place, the contractors deemed it necessary to be at the expense of arching. Several massive blocks of the Anglesea limestone have been lately placed in position as the coping-stones of the tunnel entrances; they weigh from 20 to 25 tons each. The blasting of the Selkley rocks has long been desired by all parties interested in the trade of the Menai Straits. These obstacles are situated in the middle of the Menai navigation, and it is on one of them, called the Britannia rock, that the centre pier of the great bridge is being erected. It was agreed by the contractors and trustees of the Carnarvon Harbour, before the commencement of the works, that a portion of the rocks should be blasted by the former; and these gentlemen have stated, in reply to a communication from the trustees, that they are willing to fulfil the agreement as soon as they are in a condition to remove the scaffolding, which will be about May next. The pier, it is understood, are now 60 ft. in height.



### PRICES OF MINING SHARES.

Copper ores for sale on Thursday week, at Andrew's Hotel, Helmsrath. Mines and Fur-



## NOTICES TO CORRESPONDENTS.

We should feel obliged to all persons, captains, or adventurers, to forward particulars of meetings, &c., of the mines with which they may be connected, on the earliest opportunity, that they may be published in the Journal with as little delay as possible.

"C. W." (Northampton).—All the shares in the Guadalupe Mines are taken up, and the 7th instalment of 10s. in course of payment. The steam-engine and all machinery are on the mines, from which the reports are favourable. The shares are 5s. each; and we are informed that 200 have been sold at 2s. 6d.

"Plain Facts," on the Copper and Smelting Trades (No. IV.), will appear, if possible, next week.

We must impress upon our correspondents, the necessity of invariably furnishing us with their names and addresses; not that their communications should, consequently, be noticed, but as an earnest to us of their good faith.

Now ready, price 2s.

## A Glossary of Mining and Smelting Terms,

USED IN ENGLISH AND FOREIGN MINING DISTRICTS.

Published at the office of the Mining Journal, 26, Fleet-street, London; and may be had of John Waale, 59, High Holborn, and of all booksellers and newsmen.

## THE MINING JOURNAL

Railway and Commercial Gazette.

LONDON, DECEMBER 2, 1848.

The MINING JOURNAL is published at about Eleven o'clock on Saturday morning, at the office, 26, Fleet-street, and can be obtained, before Twelve, of all news agents, at the Royal Exchange, and other parts of London.

It has long been matter of surprise and remark, not unmixed with something like contempt for our want of tact as a mining nation, that we have no public establishment for cultivating the study of the practical knowledge of mining, in connection with geology, similar to France and other continental nations. This charge is strictly correct, and, doubtless, is itself a great national defect—some remarks on which subject will be found in another column. We would, however, on the present occasion, call the attention of our readers to an establishment, which, notwithstanding we have our British Museum, excelled, perhaps, by none in the world for extent, beauty, antiquity, and value of its various specimens, works of art, and its library—notwithstanding we have hosts of similar institutions, which, although of less pretensions, still possess features of the greatest interest—for real utility, practical value, and the information conveyed of the commercial value of the varied productions of the earth, none are of greater interest—not only to the landholder, the engineer, the architect, and the mine adventurer, but to the public at large—than the MUSEUM OF ECONOMIC GEOLOGY AND OFFICE OF MINING RECORDS.

This valuable institution is situated Nos. 5 and 6, Craig's-court, Charing-cross, and, undoubtedly, owes its origin to the suggestions of its present able director, Sir H. DE LA BECHE, who, in July, 1835, communicated to the then CHANCELLOR of the EXCHEQUER the fact, that the various parties employed on the geological survey, had constant opportunities of collecting specimens of the various strata and mineral products of the earth, illustrative of the application of geology to the useful purposes of life, and strongly urged the national advantages which would arise from their collection, having them properly arranged, placed in a suitable museum, and exhibited to the public gratis. The members of the then Government immediately saw the value of these suggestions, and, much to their credit, these clear and comprehensive views at once received their cordial support. Apartments were allotted for the collection already formed, and in Feb., 1837, Lord DUNCANNOX, the Chief Commissioner of Woods and Forests, requested Sir H. DE LA BECHE to superintend the carrying out the objects in view, which he most cheerfully undertook, and has ever since—not only gratuitously, but with a zeal and ability which the present highly advanced state of the institution amply evinces.

The details of the arrangements of the interior of this museum are such as to give the greatest facility for acquiring a perfect knowledge of the various specimens, consisting of British building stones, granites, porphyries, serpentines, and marbles, the several earths, and their application to the useful arts of life. Ores and metals, British and foreign; anthracite and bituminous coal, with models of mines, mining implements, machinery, and others illustrative of geological phenomena, with corresponding maps, plans, sections, drawings, &c., of the first execution. These are arranged with every reference to instruction, and the situations from whence obtained carefully marked, not only on the specimens themselves, but also on good maps, whereby a large amount of information is condensed, and rendered easy of access, not only to those most interested, but to any one of the most common understanding. It may be well to remark, that the great object of Sir H. DE LA BECHE being utility, the specimens only can find a place which possess an economic value, and are sufficiently large to afford a correct idea of their structure, colour, and value.

Here, then, we have an institution which affords gratuitously one of the finest opportunities for the study of economic geology to be found in the kingdom; and also forming an exhibition calculated to amuse and instruct all, from the artisan to the wealthy, and most particularly calculated to form and strengthen the minds of the youthful and the studious. As the annual festive season approaches, when our youth, loosed from the trammels of the school, will visit the metropolis, we cannot close these remarks without recommending parents and guardians, who have not yet availed themselves of a visit to the establishment, by all means to make themselves and their charges acquainted with the importance of the Museum of Economic Geology. It is open every week-day, from ten o'clock to four, from November to February, and until five during the rest of the year. We shall, in our two or three next Numbers, for the information of those at a distance from London, give a slight description of the objects in the various departments now deposited in the institution.

The proceedings in the Court of Common Pleas on Friday, the 24th ult., afford some evidence of the correctness of the opinions we have expressed with reference to the Acts of Parliament lately passed, applying to Joint-Stock Companies. It appears that certain proceedings had been taken against a shareholder in the UNIVERSAL GAS-LIGHT COMPANY, and the rule for issuing execution discharged with costs, in consequence of 10 days' notice, as required by the Act, sec. 68, not having been given—the lawyers appearing not to have carefully read, or understood, the clauses of the Act; but, with the view of remedying the defect, counsel for the plaintiff subsequently obtained a rule against the defendant, calling upon him to show cause why execution should not issue, under the 66th sec. of the Joint-Stock Companies Act, 7 and 8. Vic., c. 110. Mr. Serjeant TALFOURD now contended that such rule must be set aside, inasmuch that the former application to the Court, on which the plaintiff was defeated, was against the defendant as a "former shareholder," while the present was as a shareholder "for the time being." After argument on the part of counsel in support of the application, the Court granted a rule absolute for the issuing of execution against the defendant, on the ground that having been a shareholder once, and signed the deed, by the 3d and 15th sections of the Joint-Stock Companies' Act, he continued a shareholder until

he had divested himself of that character by the transfer of his shares. We refer to the report of the proceedings, inserted in another column, and advise our readers to look not only through the Act in question, but that which has subsequently passed.

We have not for some time past had to record a loss among our public men more unexpected and afflictive than that arising out of the decease of Mr. C. BULLER, which took place at his house, in Chester-square, Piccadilly, on Tuesday last. The honorable gentleman had sat in several parliaments for the borough of Liskeard, and his constituents of that place, as well as the electors of the country at large, will feel the almost irreparable bereavement they have sustained. He was a descendent of one of the most ancient and historical families of the county, and was, in a general sense, a type and representative of his countrymen. In his Parliamentary deportment he was cheerful without trifling, and profound without being pedantic. On almost all great public questions he took the popular side, and was the conscientious and consistent advocate of popular, as opposed to retrogressive, principles. He had not long participated in the official business of the state; but, during his limited tenure of office, he had given proofs of high administrative abilities, as he had before given proof of the possession of powers admirably adapted to the business of the House of Commons. Time and further experience would have made him a ripe and ready statesman; but he has passed away in the flower of his days. The constituency which sent him to the Legislature, and the country of which he was one of the children, have just reason to be proud of him, and juster reason to deplore his premature removal. His death has lessened the sum of virtue and ability which we hoped was in store for the public service. He had lived long enough, it is true, for his own renown, though not long enough for the public necessities—having gone up, as we trust, to a house not made with hands, at the early age of forty-two.

ON CHEMICAL PROCESSES FOR THE BORING OF ROCKS, &c., TO BE BLASTED; BY M. E. MORIDE.—M. Courbebaissé having stated that it was the calcareous rocks only which could be acted upon by hydrochloric acid for blasting purposes, and that the silicious rocks, quartz, granite, &c., required the employment of another agent—most probably hydrofluoric acid, which it would be necessary to make on the spot; and having also stated, that he had not been able to undertake any experiments on the subject, with a view to save miners and engineers from useless and expensive experiments, a civil engineer of Nantes, M. Emeril, determined to experiment on the subject; and I was directed by him to prepare a large quantity of hydrofluoric acid, to be used both in a liquid and gaseous state. The result of these experiments proved the impracticability of the process for mining purposes, for the gelatinous layer formed by the action of the acid on the rock—effectually prevented the application of another portion of acid. Notwithstanding all our endeavours, most carefully and assiduously made, we were unable to obtain the slightest benefit from the application of this process. Besides, the tediousness of the operation would prevent its practical adoption.

IMPROVEMENTS IN EXTRACTING COPPER FROM ITS ORE.—A patent has been obtained by Mr. J. P. Penny, "for certain improvements in obtaining copper from copper ores"—the specification of which was enrolled on the 24th Nov. These improvements consist in decomposing the carbonates and oxides of copper ores by leaves, chips of wood, charcoal, or other similar carbonaceous matters, during the process of smelting. The furnaces employed are of the ordinary melting and reverberatory kind used in Swansea and Holywell, differing only in this, that the crown is brought in closer proximity with the bottom, in order to keep the flame and heat down upon the mass; and that the furnace is made larger, to admit of the employment of wood as the fuel. The furnace being heated to white heat, the copper ore, previously broken into pieces, is introduced through the crown; and, when fused, a sufficient quantity of leaves, wood chips, charcoal, or other similar carbonaceous matter, is thrown in upon it; or the copper ore may be reduced to powder, and mixed with the carbonaceous matter, prior to its introduction into the furnace. The copper, when separated from its compounds, is received into a cavity in the furnace; after which it is tapped, and run out into moulds, in the usual way. —Claim: The decomposing the carbonates and oxides of copper ores by means of leaves, chips of wood, charcoal, or other similar carbonaceous matters, during the smelting process.

IMPROVEMENTS IN MANUFACTURING BAR-IRON.—Mr. Russell, of Lydbrook, Gloucestershire, has taken out a patent for an improvement in the manufacture of wire-rod and horse-nail rod iron, consisting of submitting the rod before cutting into billets, to the action of a die, or draw-plate, termed a "cleanser," whereby the scale is removed from the surface, which would otherwise require to be burned off. It consists of two plates, moveable up and down in a vertical slide; in the under edge of the upper plate and upper edge of the under plate one or more grooves are made, corresponding in form with the section of those in the last pair of rolls, to which the bar is to be subjected, which are generally rectangular, or of V form, for this kind of iron; the grooves in the upper plate stand immediately over the groove in the lower plate, so that when the two plates are brought together, the grooves form apertures, corresponding to the sectional form of the bar-iron as it comes from the rolls. The cleanser is placed in front of the last pair of rolls, and its V grooves are caused to stand exactly opposite a corresponding number of grooves at the finishing end of the rolls. The iron is first refined in the usual manner, with charcoal in a refinery, hammered in the usual way, into a bar 5 in. or 6 in. square in the section; then passed through rolls, until it becomes 1½ in. square; it thence passes the cleanser, which effectually clears it of scale, and goes through the finishing rolls, and may be cut into billets, to form bars in the usual way.

IMPROVEMENT IN IRON AND OTHER TUBES.—Mr. Seaton, of Camden Town, has taken out a patent for an improved mode of closing welded tubes. If of iron, they are placed on an iron or steel mandril; after being heated to a welding heat, the end to be closed slightly projects, and is submitted to the pressure of a suitably formed die. When of copper, they are submitted to the same process, with the exception of heating; and as a small hole is left, that must be closed by a rivet, in the usual way.

INDIA-RUBBER FLOOR-CLOTH AND PAVING.—On noticing an advertisement, which will be found in another column, "Fanshawe's India-Rubber Matting" &c., we were induced, from its description being so similar to the "Kampulicon," which we have so often favourably noticed, and which has been, within the last four years, extensively used in her Majesty's palaces, dockyards, and shipping, and by numerous private individuals, for pavement, and other purposes, to make some inquiries. We find the material to be manufactured by Mr. J. H. Morris (see advertisement), under the same patent, and the facts of the case we understand to be these. Mr. Fanshawe, the original patentee, granted a license for its exclusive manufacture, on payment, from time to time, of certain royalties; the licensee, got up a company, premises were taken, and machinery erected for its manufacture. During the early manufacture of the article, wood dust had been employed to mix with caoutchouc; the licensee under misapprehension, we expect, considered that if they used cork raspings they should save the royalties, as not working under the patent. They did so, and the consequence was an action in equity, which, after four years' expensive litigation, has been decided against the licensee—the patent being for "wood dust, or similar or other granulated materials." They are thus mulcted in the whole royalties during four years' manufacture and sale, with entire cost of the action, which the master is now taxing. We witnessed some beautiful specimens of this floor-cloth, in which wood dust was employed, and which can scarcely be detected by the eye—the India-rubber retaining its colour and flexibility in a very great degree. The result of this action is, that although the company can still manufacture under their license on payment of the royalties; from their refusal for four years, the right to make and sell also, has reverted to the patentee, of which he is now availing himself.

## THE POETRY OF SCIENCE.

The study of the philosophy of the various physical phenomena of the works of Nature, consisting of motion, gravitation, molecular forces, crystallography, heat, solar and terrestrial light, actinism, electricity, magnetism, chemical action and forces, geological phenomena, with the phenomena of vegetable and animal life, are, undoubtedly, the most sublime of any of the various subjects to which the mind of man is directed in their investigation; and among the authors whose researches have enlightened the public, Mr. Robert Hant, of the Museum of Economic Geology, stands pre-eminent, particularly in his investigations on the subject of light. We have now before us a work\* from this gentleman's pen, in which, as he states in the preface, he has endeavoured "to link together those scientific facts which bear directly and visibly on natural phenomena, and to show that they have a value superior to their mere economic applications, in their power of exalting the mind to the contemplation of the universe." Well has he performed his task; his style throughout is easy and flowing; he has invariably adhered to the stern reality of truth throughout; and where imagination is brought sometimes into play, it is ever in accordance with natural or deduced facts. The language is as much as possible free from those technicalities which so perplex the general reader, and when obliged to be employed, the history of experiments in the branches of science clearly explain them. The authors of these various experiments, with the deductions drawn from them, are given at the end of the volume, which extends to upwards of 460 pages, and is got up in a style, which will be a credit to any library, public or private. As a specimen we give the following from the introduction:—"Man, a creation indued with mighty faculties, but a mystery to himself, stands in the midst of a wonderful world, and an infinite variety of phenomena arise around him, in strange form and magical disposition, like the phantasma of a restless night. The solid rock obeys a power which brings its congeries of atoms into a thousand shapes, each one geometrically perfect. Its vegetable covering, in obedience to some external excitation, develops itself in a curious variety of forms, from the exquisitely graceful, to the singularly grotesque, and exhibits properties still more varied and opposed. The animal organisation, quickened by higher impulses, powers working within, and modifying the influences of the external forces, presents from the monad to the mammoth, and through every phase of being up to man, a yet more wonderful series of combinations, and features still more strangely contrasted." And, again—"The mind of man in its progress towards its higher destiny, is tasked with the physical earth as a problem, which within the limits of a life it must struggle to solve. The intellectual spirit is capable of embracing all finite things—man is gifted with powers for studying the entire circle of visible creation, and he is equal, under proper training, to the task of examining much of the secret machinery which stirs the whole. Whether by the improvements of the powers of the human mind man will ever be enabled to embrace within his knowledge the laws which regulate the more remote principles, we are not sufficiently advanced in intelligence to determine. But if permitted even to a clear perception of the theoretical power, which we regard as regulating the known forces, we must still see an unknown agency beyond us, which can only be referred to the Creator's will."

On speaking of the atoms of which bodies are composed, on those of carbon he remarks—"Among others, we may adduce the different states in which we know carbon to exist. We have the diamond, with its beautiful light-refracting property, and its hardness and high specific gravity, capable of being converted into graphite and coke. Charcoal graphite and the diamond are totally unlike each other, yet we know they are composed of the same atoms. Charcoal is a black irregular substance, light and readily inflammable; graphite is crystallizable, but the forms of its crystals cannot be referred to those of the diamond, and it burns with difficulty. The diamond occurs in the most beautiful and transparent forms, and it can be burned only at the highest artificial temperatures. We are, however, convinced by experiment, that the brilliant and transparent gem is made up of the same atoms as those which go to form the dull black mass of charcoal. What is the mystery of this we know not. These peculiar conditions have been the subjects of anxious study; but science has not yet let in a ray of light upon the mystery. That a different state (it has been called an allotropic condition) is often induced in the same class of atoms is certain, and hence the variety of the resulting compounds. To continue our illustrations with carbon. May not carbonic, oxalic, mellic, and corrosive acids owe their differences to some allotropic change in the ultimate atoms of this element. We know that silicon, the metallic base of flint, is capable of assuming two or more different states, and sulphur, silicon, phosphorus, and arsenic are susceptible of these remarkable changes."

The extracts from the works of our first chemical and philosophical authors, extending over above 60 pages at the end of the volume, are in themselves a most interesting portion of the work, which, we have no doubt, will hold a place in the library of every one who is fond of the study of the phenomena of Nature.

GOVERNMENT DEPARTMENT OF MINES.—It has long been a matter of surprise to those connected with mining operations, that, in a country like this, where they are carried on to a greater extent than any other in the world, there is no Government department of mines, having some control over the mode of working, and using every means to prevent explosions and accidents, as in France, and, indeed, every other continental state—to give those whose lives and limbs are at stake in exploring and underground works, an opportunity of obtaining some scientific knowledge of their calling, in addition to that of mere labour. The numerous accidents that are continually occurring in our mining districts, strongly call for the establishment of such a board, to be composed of men well practised in mining engineering, and connected with this most important branch of our national industry. The *Ecole des Mines* of Paris, and other continental mining countries, appoints inspectors of mines in all the mineral districts, whose duty it is carefully to inspect all the mines within their jurisdiction, as to the sanitary state of those employed—the manner in which the mines are worked—the means of proper ventilation—and, above all, their general position as to the accumulation of fire-damp, or any chance of other accidents. They make a report monthly, or quarterly, to the chief board, as circumstances may require; and these investigations have proved highly beneficial, for seldom or ever are accidents heard of in the mines on the continent, where such rigid discipline is enforced; while, in this country, we are continually shocked with details of the results in enormous loss of life by explosions in our coal mines, and these too frequently ascribed to the negligence of the miners; this practice may be traced to an endeavour on the part of owners to clear themselves from all blame in not attempting to improve the impure state of the workings by proper ventilation—or knowingly leaving other causes of accident unaltered and unremedied. If it is really the former, it is the bounden duty of the overlooker, or proprietor, to enforce a most strict observance of the rules and regulations, under heavy penalties; and if the latter, it is but a proof that qualified inspectors should be appointed, which, far from being an evil, would tend to clear the proprietors from all blame of neglect, and be also highly satisfactory to the public. It is stated that his Royal Highness Prince Albert, who may now justly be considered a British miner, the Earl of Durham, Marquis of Londonderry, Duke of Sutherland, Dr. Bowring, Mr. James Wyld, and numerous other noblemen and gentlemen, extensive proprietors of mining property, have for some time had the above important subject under their serious consideration; and that, in all probability, the question will be brought before Parliament in the approaching session. It is true, and it is the principal difficulty in the way, that the mines in this country are private property, while on the continent the several Governments grant concessions for their being worked under existing regulations; still, their being the property of individuals, only lays them open to greater abuses, and from the valuable statistical information which could be obtained under a new system—information which cannot now be got at—it would be highly desirable that some plan of inspection and instruction could be arranged, without interfering too much with the rights of private property.

VIRGIN SILVER.—From the Swedish official paper, of the 27th of October last, we learn that on the 14th of September, the workmen employed in the King's mine, which is one of the Kangsberg silver mines in Norway, found a lump of pure native silver, weighing 208 lbs.; and on the 6th of October another lump of virgin silver, equally pure in quality, of no less weight than 436 lbs., was dug out of the same mine. It is a fact worthy of being recorded, that about 20 years ago this mine was offered for sale in London for the sum of 10,000*l.*; but the capitalists of that day had not sufficient confidence in the treasures it was represented to possess, to advance this comparatively small price. Subsequently the Norwegian Government was strongly urged by the scientific of that country to work the mines at the expense and for the benefit of the state. The operations were commenced, and prosecuted with vigour; and for a considerable number of years this mine has annually yielded to the Government of Norway a much larger revenue than the price which could not previously be obtained for the mine itself.

\* *The Poetry of Science; or, Studies of the Physical Phenomena of Nature.* By ROBERT HANT, author of *Researches on Light*, &c., Keeper of Mining Records, Museum of Economic Geology. London: Bogue, Dehman, and Bogue, King William-street, Strand.



## THE BANK CHARTER ACT OF 1844, AND THE INDUSTRIAL INTERESTS OF THE COUNTRY.

## I. THE LANDED INTEREST.

At first sight, it would seem as if the landlords of this country were the party least interested in the regulation of the currency. The abundance, or scarcity, of the circulating medium does not immediately appear to bear upon the productiveness of the soil, and whatever be the fate of the manufacturer, the miner, or the merchant, the land has an intrinsic value which cannot be destroyed. Moreover, when things come to the worst, since men must eat, the landowner can cause himself to be paid in any medium he likes best. If he does not trust paper, he can demand a metallic currency; the Americans and Russians do so when famine prevails in Britain. Of course the landowners, or their farmers, could do the same, if they thought it consonant to their interest. A closer examination shows that they still have it not all their own way. Without affirming that the agriculturists of England have so minutely studied their interest, as to find they gain by occasionally taking and paying away bank notes in exchange for their produce, it will be enough for the moment to assume that they are not afraid of an occasional use of paper in the place of metal. Nay, neither farmer nor landlord scruples, as soon as he has paid a sum into his banker's, to draw a cheque upon that banker, and to require that all who know him shall hold the cheque to have value. No one, however, expects persons who do not know him to accept his cheque as of value; but to find it refused by those who know his transactions, his business habits, his positive wealth, would mortify the richest individual. In private transactions, therefore, each person draws a distinction which few heed when discussing the merits of the Bank Charter Act. The cheque which a man expects to find taken when offered to friends, but which nobody is surprised at seeing refused by strangers, is, we must note, drawn upon the same banker in both cases. The party which refuses it may know the banker intimately, although he does not know the drawer sufficiently to induce him to take it. The banker may be a man of incalculable wealth, yet still the cheque is refused. It is, therefore, clear that the cheque passes current on the credit of the *drawer*, and not on that of the *banker*. An agriculturist, like other people, must enjoy credit to be trusted, and to the extent that he commands it, we find both peer and farmer ready to exert their credit. He would be nettled at being told that his cheque could not be taken, because the party to whom he offered it did not like his banker. Each would assuredly consider a party thus raising difficulties as a mischievous person, and would insist upon the assumption, that for a short transaction, the standing of his banker was quite a secondary consideration to the fact that he had property in the bank.

Now it is obvious, that the principle upon which the present charter of the Bank of England rests confounds two distinct sources of banking credit. It does even more, for it not only holds up unnecessarily to the view of parties, anxiously busied about their private transactions, the condition of the Bank, and places it in a dubious light, but it positively turns the attention of dealers of all kinds from their own particular business to that which comparatively little concerns them—the solid standing of the national bank. This act removes the standard of credit according to which a bill ought to have value, from the bill itself to the state of the Bank coffers. In this respect, no favour was shown, whether a bill was drawn against agricultural or other produce. But, as the chance of obtaining discounts diminished as the gold went away, the pressure on such as could only purchase for ready money, increased as the price of provisions got dearer.

Assuming, for the sake of mere illustration, that the annual agricultural production (cattle included) of the United Kingdom is of the value of 300,000,000. If we consider that this is all sold at market, and repurchased by retail for consumption—that also all the wages and rent required to keep up this production have to be advanced, and to be spent by those who receive them, if the whole were to be done by actual payments in hard cash, how much coin should we require to transfer 300,000,000, four times over within the year? But, as has been said, the agriculturist does not scruple to perform a part of these transactions—for instance, the payment of rent and taxes, by means of cheques; whilst others are effected mostly through the aid of bills of exchange, such as his sales to factors and dealers. Coin, or small notes, are usually only required for paying wages, and the tradesmen's bills for household expenses. The bills drawn for produce sold cancel the amounts drawn in cheques upon the banker, and leave a balance for wages and expenses. The tradesmen receive the sums paid away in wages, and return them to the banker—that is as much as to say, that wholesale dealings are nearly all transactions of credit; while retail trade and wages are managed with cash, or small notes.

We have, therefore, a distinction clear enough between the payments which affect the landlord and tenant, or the large dealer, in their mutual dealings on one side, and such as affect the cultivator of the soil, the landlord or farmer, and his hired labourers, as well as the tradesmen, on the other. The first set of transactions are all carried on almost without sight of money, strictly so called; the second, or the small payments, are almost exclusively managed through the agency of coin, or notes. Hence the good or bad arrangement of the currency is a matter in which the labourer and small tradesman are especially interested. The landlord, large farmer, and dealer, are only interested in the state of the currency in proportion to the indirect influence which abundance or scarcity of money may have on their large transactions. But this influence, which is indirect for the large transactions, is direct for all small ones. Before the farmer is frightened out of growing crops, or the dealer out of buying them for market, the labourer must have ceased to be as good a customer as usual at the shop. It is by pinching wages, and by beating down tradesmen's profits, that the production of the farmer, and ultimately the landlord's rent, are affected; but owing to the sensitive nature of the workman's credit, and the limited scale of dealing of small shopkeepers, a slight restriction of the currency disorganises all their traffic. With this clear distinction in our heads between the large transactions, which are settled through the banker's book, and the small ones, which are paid for over the counter, it will not be difficult to calculate the tremendous pressure which, during 1846 and 1847, the exportation of current coin for grain, which could not be replaced by notes, inflicted on the labourers and small tradesmen of these realms in the most direct and unmitigated fashion. That the pressure ultimately reached the landlord and dealer, has been testified by the selling up of noble dukes, and other proprietors, by the sad list of bankruptcies in 1848, and by the number of houses now unoccupied in town and country, which are looking for tenants with indifferent chances of success. Of course, the depreciation of mining, railroad, and other shares, may be traced to the same source.

The evil is here stated, and its source has been pointed out; but to establish the connection clearly between this distress and the state of our currency laws, will demand more detailed investigation. We trust that we do not here assume too much, as far as the landed interest is concerned, in declaring that neither landlord, tenant, nor labourer, can be indifferent spectators, when a pressure is felt which affects trade; and that, as the poor man has good reason to be the first to complain, it is as impolitic, as it is unjust, to disregard the warning which his cry ought to convey to his richer neighbour.

**MINIATURE LOCOMOTIVE ENGINE.**—Mr. England, of the Hatcham Iron Works, New Cross, Deptford, has lately constructed an engine of this description, for working the Newhaven branch, on the London and Brighton Railway. The first trial made was between New Cross and Croydon, and the results have proved highly satisfactory; by itself this little engine, with the greatest facility, was put to a speed of 45 miles per hour, and, but for its being a first trial, and the machinery, consequently, not in smooth working order, there is no doubt but 60 miles per hour would have been obtained without difficulty. The locomotive then took, with the greatest ease, two loaded coal trucks, 9½ tons up the New Cross incline, of 1 in 100, at a rate of 25 miles per hour. It is a six-wheel engine, and the dimensions are as follows:—Cylinder 7 inches in diameter, with a 12 inch stroke; diameter of driving-wheels, 4 ft. 6 in.; the two pairs of bearing-wheels, 3 ft. diameter each; length of tubes in boiler, 11 ft. 2 in.; extreme bearing between the axles, 14 ft.; total length of engine and tender, 20 ft. The tender is not detached as usual, but the coke place and water tank are on the same carriage with the engine. The total weight, with a complement of water and fuel for a journey of 100 miles, does not exceed 9 tons. Mr. England has been exceedingly fortunate in this his first attempt at locomotive construction, in producing with complete success an inexpensive and light engine, for working branch lines, where the traffic will not pay for the enormous cost of fuel, and wear and tear, caused by the present unavoidable practice of employing the usual ponderous machines engaged on the trunk lines.

## SIR WILLIAM BURNETT'S DISINFECTING AND PRESERVATIVE FLUIDS.

On numerous occasions we have referred to the progress and results of Sir W. Burnett's chloride of zinc, as a preservative of wood, canvas, cordage, woollens, &c.; and we have now the pleasure of noticing the introduction of a more concentrated solution, for the purposes of disinfection, deodorisation, &c. Among the numerous disinfectants before the public, this appears to have been the most successfully employed, and highly favourable reports of its results have emanated from the Sanitary Commissioners. On carrying out the directions of the Commissioners of Sewers, for flushing the drains, cesspools, and sewers, the surveyors (Messrs. Roe and Phillips) also bear high testimony to its good qualities, stating that, "previous to commencing the cleansing, the stench was most obnoxious; but, upon a solution of Sir W. Burnett's chloride of zinc being thrown upon the surface of the soil, and upon the paving and walls around, it had the desired effect of destroying it; nor did any unpleasant smell arise during the process of removal. To facilitate this work, we have directed several mechanical arrangements to be made forthwith."

Mr. Charles James Hodgson, a member of the Chemical Society of London, has also furnished a full report to the Commissioners of Sewers, on the comparative qualities and quantities required of Ledoyen's, Ellerman's, and Sir W. Burnett's fluids, as disinfectants and deodorisers. "One week was allotted for each inquiry, and the average of their respective values was based upon their powers of destroying, or decomposing, the sulphuretted hydrogen, whether existing in a free state or in combination with the ammonia of the soil. The result was—Ledoyen's, 11.52 pints per cubic yard of soil extracted; Ellerman's, 5.48 pints; and Burnett's, 1.15 pint per yard; while, from unavoidable circumstances, the full number of experiments could not be carried out with the latter; if they had, Mr. Hodgson considers 1 pint per cubic yard only would have been required. Having described Ledoyen's fluid as consisting of a solution of nitrate of lead; specific gravity 1.260, imparting a yellow colour to the skin, destroying linen and other fabrics, and containing an excess of acid; and Ellerman's as a perchloride, with 10 per cent. of acetate of iron, specific gravity 1.500, with a strong tarry odour, a deep brown colour, strongly staining the skin, and corroding textile fabrics, from an excess of acids. He states that Sir W. Burnett's fluid consists of a solution of chloride of zinc, colourless, inodorous, and contains no excess of acid; it, therefore, does not stain nor corrode linen and similar fabrics, like the other before-mentioned salts; and on account of the large quantity of salt contained in a small space, it has the great advantage of extreme portability. Its specific gravity is 1.600."

The following is the analysis of Messrs. Ellerman and Co.'s fluid, furnished to Sir Wm. Burnett by J. T. Cooper, Esq., the analytical chemist, since the publication of Mr. Hodgson's report:—

I have just completed the quantitative analysis of Messrs. Ellerman and Co.'s deodorising fluid, and report the same as follows:—The specific gravity of the fluid is 1.443.—A quart bottle, or 40 fluid ounces, gave of:

|                             |             |                         |              |
|-----------------------------|-------------|-------------------------|--------------|
| Sulphuric acid .....        | 419 grains. | Oxide of lead .....     | 67.50 grains |
| Hydrochloric acid .....     | 7092        | Oxide of arsenic .....  | 13.45        |
| Peroxide of iron .....      | 1920        | Magnesia .....          | 205.30       |
| Peroxide of iron .....      | 2495        | Acetic acid .....       | .....        |
| Peroxide of manganese ..... | 642.40      | Oxide of antimony ..... | a trace.     |
| Oxide of zinc .....         | 480         | Selenium .....          | a trace.     |
| Oxide of copper .....       | 212.50      |                         |              |

The quantity of acetic acid, though considerable, was not determined.

In the Third Report to the Queen, of the Metropolitan Sanitary Commissioners, presented to both Houses of Parliament, by command of her Majesty, the following paragraph appears:—"The operation (of deodorising cesspools by Sir W. Burnett's fluid) has now been performed in more than a thousand instances, in every part of the metropolis, without, so far as we have been able to ascertain, any complaint as to the nature of the process, or of its being followed by any injurious consequences; on the contrary, there is positive and decisive evidence, to which we shall have occasion again to advert, of more direct and immediate effects, in the diminution of disease, than could have been expected from one of several sources of disease being removed." Such testimonials as these must, we consider, appear most conclusive as to the superiority of its efficacy and cleanliness under all circumstances. As the effects of the chloride of zinc, as a preservative of timber, linen and woollen fabric, &c., have been proved so favourable, we do not consider it necessary to advert further to them here, than merely to say that, as to cleanliness, we have seen delicately-white holland, linen, muslin, &c., subjected to the process, and, when washed, have not acquired the slightest tinge to mar their whiteness.

## DAVISON AND SYMINGTON'S DESICCATING PROCESS.

This valuable and novel process for drying goods in every description of manufacture, which was patented, and a company formed some years since, has been rapidly progressing in public estimation, and may now be considered safely established on a firm basis, and makes liberal and permanent returns to the investors. It has already been applied to 15 branches of trade, from the seasoning of the hardest woods to drying paper and fabrics of the most delicate construction, yarns, silks; in cloth bleaching and dyeing, purifying and seasoning brewers' and distillers' casks, roasting coffee, cocoa, and other seeds and vegetable productions, calico and paper printing, public baths and washhouses, jannapanning, preparation of India-rubber and gutta percha, wheat, barley, oats, and other corn, and, in fact, in every other manufacturing process where a thorough and cleanly drying process is absolutely necessary. In its construction and operation it is simple and certain; a temperature may be obtained at once continuous and controllable, as compared with any of the old methods, such as fires, hot plates, steam and hot water pipes, cockles, &c.; the economy of time is enormous, while there is a saving of fuel of from 50 to 70 per cent. Its extreme cleanliness also, and the pure and healthy atmosphere which the people employed breathe while at their duties, render this process a desideratum wherever artificial drying is necessary. So important an introduction to the arts was it considered by the council of the Society of Arts, that the patentees were presented with their first large gold medal for the invention; and, from the numerous testimonials received, it would appear to promise a complete revolution, for perfection and economy, in the method, time, and cost, of numerous processes of manufacture. Those from large bleachers of yarns, silks, and fabrics, in Scotland, certify that it can be applied to our whitest colours without tainting or bringing back the colour a single shade. One party says—"I had a striking instance of this not long ago. We had damp hazy weather for nearly a fortnight; in consequence of this, I had an accumulation of wet yarns: I put your apparatus to work, and dried up all my stock of bleached yarns, and delivered them to the manufacturer, who declared that they were as well finished, and the colour as high, as though the goods had been dried in the open air, and on the finest summer's day."

The general opinion appears to be that, in addition to the many important advantages above stated, a full saving of 50 per cent. is obtained. One most important fact we must not avoid mentioning—that for drying the garments of the poor, at the public baths and washhouses; it not only dries quickly, but thoroughly purifies and takes away those disgusting odours which hang about clothes long worn, and which unfortunately too often is the case with those for whom these excellent conveniences were established. The apparatus by which the process is conducted consists of simply a number of cast-iron pipes, of a semicircular shape, and so connected, at the bottom or springing of the circle, with two horizontal pipes, as to form one continuous pipe, the whole being set in brickwork, with a common furnace in the centre; a rapid current of air is caused to pass through the pipes, by means of a fan blower, and thus driven into the chamber or machine containing the articles to be acted upon. It will be evident, from this description, that the whole effect is produced by so much atmospheric air and so much heating surface—two points which have been so accurately considered by the patentees, that it is now a perfectly a, b, c question with them, as to generating any temperature, in an almost unlimited cubical space.

The first of these patents was taken out about four years ago; but, in consequence of some improvements, and various new applications of the process being discovered, a new one was obtained, in November, 1847.

**THE OAK-FARM IRON WORKS.**—An arrangement is said to have been entered into between the assignees in the bankruptcy of the late Oak-Farm Company and Sir Stephen Glyn, Lord Lyttelton, and Mr. W. Gladstone, the proprietors of the estates, by which further litigation will be avoided; 20,000*l.* is named as the sum agreed upon to be paid by the proprietors, in lieu of breaking up the machinery; and, although, from their heavy claims, the greater part of this will revert to themselves, yet the creditors may now indulge a hope that some dividend will be declared. There are now in the district of South Staffordshire 106 furnaces in, and 81 out of blast. [The particulars are given in another column.] This presents a favourable feature in the present condition of the iron trade.

## Original Correspondence.

## ON TIN ORES AND BLACK TIN.

Sir,—Having lately been engaged in experiments on the tin ores and black tin, of Drake Walls Mine, with the object of ascertaining the best method of destroying other metalliferous minerals with which the native oxide is combined, and in calculations as to the relative value given by the tin smelters, for the absolute contents of white tin in various qualities of ores, you may, perhaps, consider them worth notice in your useful Journal. I should first observe that I have always, in assaying black tin (instead of calcining), adopted the means of separation of such extraneous matter, as is capable of solution, by digesting a given weight as sample alternately in nitric and muriatic acid, usually taking 100 grains for this purpose; and, from showing this in my laboratory, was, I believe, the originator of the application, on a large scale, for cleaning tin, although this, of course, can never be so effectual, as the assay where the cost of acids is of no importance. By thus treating the sample of tin, it will be seen that all other injurious mixtures are separated, except specular iron, and one or two other minerals of iron and silica; and should there be a considerable proportion of the latter, it can (after the action of the acids) be mostly separated by carefully washing, and, where wolfram is present, the addition of a small quantity of caustic ammonia will take up the yellow tungstic acid, after dissolving the iron which forms the other constituent. I then place this cleaned black tin in a charcoal crucible, inserted in one of clay, and filling up with charcoal dust, first mixing the tin with a small quantity of lime, in proportion to the silica present, in order to engage with it, and prevent any of the oxide of tin being combined; the result is a button of pure white tin, equal to any reduced from the best stream tin; the time occupied in the reduction is about 20 minutes, at a very strong heat—say, good white heat. In 19 cases out of 20, the tin produced is perfectly pure, and, on remelting, will show no crystalline appearance in cooling; but in the event of any combination of iron which has been insoluble, as before alluded to, I flat on the button, and digest a portion (say 70 grains) in nitric acid, with its own bulk of water, until the tin is formed as a pernitrate, when the proportion of iron can be closely ascertained, by addition of caustic ammonia to the solution, after washing the pernitrate of tin in a filter—the peroxide of iron being collected in another filter, washed, dried, and heated in the usual way.

I have thus been particular in developing the plans I pursue in assaying, in order to show that my calculations of prices given by the smelters are founded on true data, and the necessity, or desirableness, of getting the black tin of as great purity as possible, even at an expense which, in the first instance, would appear startling. It is well known to all tin miners, that the smelters used to deduct from the produce of any black tin for sale, from 1 to 3 cwt., according to quality, to pay smelting charges and waste; and that they now deduct 1½ cwt., and allow such a price for the tin, as they consider they can afford to meet the same, and that this, in effect to the miner, is the same; the facts are, as the following calculations, from actual experiments, will show, that the miner, from not bringing his tin to a high produce, gets only 46*l.* per ton for pure white tin, after smelting charges are deducted, for a produce 32½ per cent.; while, under the same circumstances, as regards standard, he gets 74*l.* 10*s.* per ton, when the produce is 56½. I am quite aware, as a lead smelter, that there will be a difference in the calculation, according to the nature of the impurity of the ore, from the character of the metalliferous portion rendering the refined metal of less value in the market; but, argue, that even with the most injurious, it does not bear any proportion in this case, as compared with the different prices obtained for such refined metal in the market, or, can, in any way, account for the difference of price obtained for the black tin from loss or otherwise, and refining, provided the process of smelting is conducted upon proper principles, according to the character of the impurities in the black tin for sale; at the same time, under existing circumstances, as regards the interest of the miner, I wish to show the necessity of bringing his black tin to a high produce, so as to leave no excuse for his not getting full value for it, even at a loss in dressing cost, and comparative quantity and value.

The results shown are from five trials of different qualities:—

| No. | Produce, after deducting 1½ cwt. for smelting charges. | Price given by smelters per ton of black tin. | Price per ton received by miners for white tin, free of smelting charge. |
|-----|--|---|--|
| 1   | 56½  | £42 5 0                                       | £74 10 0   |
| 2   | 41½  | 37 10 0                                       | 65 10 0  |
| 3   | 41½  | 15 0 0  | 46 0 0   |
| 4   | 42½  | 39 15 0                                       | 68 13 0  |
| 5   | 39½  | 18 10 0                                       | 51 16 0  |

Hatton-garden, London, Nov. 28.

P. N. JOHNSON.

## CARBON AND IRON.

Sir,—In reply to Mr. Mushet's communication of the 20th inst., I may state, it is with much pleasure I see the subject of my last paper taken up, because I feel assured that most of the opinions there expressed, although confessedly at variance with those generally received, will, on careful examination, be found to give a better explanation of that portion of the chemistry of iron-making to which they particularly refer. Mr. Mushet objects to the statement, that malleable iron, exposed for a considerable time to a red heat, out of contact of air, undergoes no change. This position, however, I must still maintain; and I consider, in the case Mr. Mushet cites, that the iron could not have been entirely cut off from the influence of the atmosphere; for it is a well-known fact, and one of which I have already taken notice, that if malleable iron be exposed to a red heat, in contact of air, it loses its tenacity and becomes brittle. The change from the state of fibrous malleable iron to that of crystalline iron by vibration, seems to have little in common with the change induced as above. Mr. Hood, I believe, was the first who pointed out that this change in structure was induced by vibration. It may, perhaps, be admitted, that if the iron be not kept at a uniform red heat, even although atmospheric air be excluded, it may assume the crystalline state by alternate expansion and contraction, resulting from change of temperature from below red heat to above red heat, and vice versa. This, however, will be a true vibration; and the iron under experiment will not be in the condition I presumed, as understood in my paper of the 18th. As to the assertion, that malleable iron fused, *per se*, retains all its properties, I must confess that I have only made a few experiments, and those in confirmation of a statement by Karsten—so that I cannot, excepting by those experiments, be certain of the truth of the latter. As such a strong counter statement has been made by Mr. Mushet, I shall, at the earliest opportunity, repeat my experiments, merely now mentioning, that from those I have performed, I have no reason for altering my opinion as already stated. Mr. Mushet also seems astonished at my statement regarding the amount of carbon in white iron: he must not, however, suppose that the amount of carbon referred to is meant to be the largest per centage with which iron can combine; it is merely the largest amount found in white lamellar iron. Mr. Mushet will also perceive, that the term *altered carbon* is explained—meaning that portion of carbon which has entered into chemical combination with the iron, in contradistinction to the *unaltered carbon*, or graphite, which merely exists in a state of mechanical mixture. Again, it is stated, that chemists are ignorant of the constitution of graphite. This is an error. Graphite, free from extraneous matters—that is to say, such graphite as may be extracted from iron—is perfectly pure carbon: this has been repeatedly proved by chemists of long standing, and repeatedly urged by myself in former replies to Mr. Mushet.

As regards the late Mr. Mushet's experiments, nothing is needed to confirm the accuracy of the experimental details. The results, however, admit of a more rational explanation, by the application of some of the ideas I have already advanced. Mr. Mushet states, that he was "confident that the iron, which contained the greatest quantity of carbon, would revive from the ore the greatest per centage of iron." This would be perfectly correct, provided the carbon in the iron existed in a free or uncombined state; such, however, is not the case, excepting with grey iron, as is shown by the results of the late Mr. Mushet's experiments. The ore employed contained 70 per cent. of iron, and yielded, on an average, with powdered grey iron, 40 per cent.; with powdered white iron, no metal was revived; and with powdered high-blown metal, there was an absolute loss. These phenomena can only be satisfactorily explained by taking into consideration the state of existence of the carbon in each kind of metal. In grey cast-iron, part of the carbon exists as combined or *altered carbon*; the remainder as graphite, or free or *unaltered carbon*. The combined carbon exercises no reducing power on the oxide of iron, as shown by the fact that white iron gives no metal whatever with the oxide; while the free carbon, or graphite, acts as ordinary carbonaceous matter in the ore, and reduces a portion of metal; and, in the case of the high-blown metal, the loss is occasioned by the oxidation of the metal itself by the oxygen in the



ore employed in the experiment—a portion of the peroxide of the ore being reduced to the state of protoxide by the action of the metallic iron. Mr. Mushet is perfectly right in saying, that "until chemists shall have ascertained the real conditions under which carbon exists in various quantities of cast-iron, they will make no advance in the science of iron smelting." He merely states that which I have already many times urged; and it is with this view that I have been induced to pen the present series of papers on the subject. Mr. Mushet will see, in future papers (which are at present with the publisher), that I have attempted to explain this matter, by giving the reactions of various bodies, with different quantities of iron; I must, however, say no more about this until the papers in question appear. As regards Mr. Mushet's explanation, of why, with equal percentages of carbon, pig-iron may be either white or grey, it is no explanation at all; it is merely a statement of facts, without at all giving the why or the wherefore. Again, it is a difficult matter to comprehend the nature of the carbon supposed by Mr. Mushet to exist in steel—it is, and it is not, carbon. If it be not the theoretical vapour, I know not what vapour it is; and yet I cannot conceive the possibility of a gaseous matter existing in steel. It certainly cannot exist as such, but must exist in the solid form. However, Mr. Mushet will see more of the views I have adopted in this matter, in the forthcoming papers to which I have already referred.

Hawley-road, Kentish Town, Nov. 28.

JOHN MITCHELL.

#### IMPROVEMENTS IN COPPER SMELTING.

SIR.—It is with much pleasure I have read the communication of your valued correspondent, Mr. Birkmyre, in the *Mining Journal* of last week, and am happy in learning therefrom that the experiments he has tested fully corroborate my statements in your valuable *Journal* of August 25th—that of bringing out separately each metallic product contained in the ores, and applying each to its own utility, by the improved method of smelting, which he has succeeded in testing on a small scale. It appears remarkable to me that, in this enlightened age of chemistry, the existing smelting works do not avail themselves of this recent and more profitable method of operation.

In your columns I observe a statement of a proposal for a new smelting association. If such an establishment should be carried out on a sufficiently large and liberal basis to secure it against the existing monopoly, I know of no better opportunity of introducing the wonderful and important effects of chemical science into the process of smelting than by its adoption by them; and I should be most happy to see them at once avail themselves of this beautiful method of separating the various metallic substances, in their several proportions from the ores, through which they are invariably disseminated. By adopting this economical process, and thus bringing into commercial activity the lights of science, they would reap a highly rich return for their investments, secure the approbation and well-wishes of every scientific man in the kingdom, and, by marching out of the old and uncertain track of our forefathers, and embracing all the experience of the last 25 years, place themselves totally independent of the ancient smelting clique, and obtain an amount of business at which themselves will be surprised.—M. W. B.: *St. Day, Nov. 23.*

#### COLLIERY EXPLOSIONS.

SIR.—I am glad to see you again in the field in defence of the working collier, and in advocacy of the cause of legislation. The dreadful list of lives lost which you expose, cannot but strike the public mind with a strong feeling, that Parliament is wanting of its duty in this most important subject. Let a life or two be lost by railway accident, or other ordinary incident, and see how keenly alive are the public authorities, and how minute is each investigation as to cause and effect—whereas, in respect of collieries, unless a catastrophe carries off more than 30 or 40 persons, the Government are passive. The coroner confines his inquiries as to which of the workmen has been rash or imprudent enough to set fire to the colliery, and generally winds up with a verdict of "Accidental Death;" or that some luckless wight has done the mischief, by some act of carelessness, proved or implied.

In scarcely any instance is the real state of the colliery minutely and disinterestedly examined into. In the late Cumberland explosion, it was shown that the pit was foul within 30 yards of the shaft; and, although comparatively a new pit, yet no reason was assigned why a colliery, so situated, should be in such a foul state. Mr. Daglish, the viewer of Wigan, had, some time previous, viewed the colliery, and appointed Mr. Forster, the local manager: why was not his report of the state of the colliery produced, and his measures for effecting an improvement in the ventilation, which was notoriously very defective? Had he been a public officer, instead of a private viewer, both he and it must have been produced, and then the public would have had responsible persons and documents laid before them. Until that is done, Mr. Editor, the mining population will be continually sacrificed to ignorance or mismanagement; but, with you, I do hope and trust, that some humane senator will move the matter into completion at an early stage of the ensuing session; for, until then, it is vain to expect any amendment.—OBSERVER: *Durham, Nov. 28.*

#### THE SAFETY LUNAR LAMP.

SIR.—The importance of the subject upon which I now address you is fully proved by the fact that, since a description of my safety-lantern appeared in your columns, more than 50 colliers have been killed by explosions of fire-damp. It is solely a desire to prevent such awful occurrences that has induced me to investigate the matter, and then to disclose my inventions, and to promulgate my safety system. Understanding that other parties are unjustly attempting to despoil me of the merit of originating the same, I beg leave to recapitulate the principal points in my suggestions.

I recommend that the use of naked lights in coal pits be altogether abolished; that some sort of protected light be invariably used, both in pure and impure pits; that the practice of examining the pit's atmosphere before work-time, and then working with open lights, be condemned as unsafe, and consequently be abandoned; that, to remove the common objection to the Davy lamp, and others—viz.: the pooriness of the light—a safety-lamp be used that shall afford a good light; that every safety-lamp (whether for candle or oil) be made to lock up, so that (the key being kept by a trusty person) thoughtless miners shall be prevented opening their lamps; that the colliers indiscriminately be not entrusted with the care and management of their lamps, but that a competent person or persons be appointed in every pit to superintend the safety-lamps, whose duty must be to distribute to the miners their lamps, to keep a stock of candles or oil to be supplied when wanted, to light, trim, and lock the lamps, and to regularly examine them, to see that they are in safe condition; and that these superintendents have a station, or stations, in parts of the pit where open lights may safely be burned, at which stations the miners must go for their lamps, and for fresh candles or oil. Such are the chief points in my safety system—the adoption of which must necessarily rest with the coal masters themselves: I can merely recommend. Let whatever description of safety light be used, there must some such system be followed, or they will become practically useless, since the very safest lamp becomes unsafe if incautiously managed. For instance, many explosions have been caused by the Davy lamp itself, when it has not been properly managed. I lay claim to the framing of this system in toto.

Your readers will recollect my description of the safety mining lantern. That was entirely of novel and original design. It was adapted to burn, not common dips, but patent wick, or palm, or any sort of candles that require no snuffing. The introduction of thick plate-glass fronts, instead of wire-gauze, is due to me. I need only say that my lantern has had the approval of several competent judges, who consider it quite safe. The only alteration suggested by any party, and which is considered by some an improvement, is this—to attach the coversides loosely to the lantern, so that they may be entirely removed when a side light is required, instead of hinging them, as was done firstly. This is only a slight variation of construction, and will entail no additional expense upon the lantern. Some parties prefer wire gauze to glass fronts; but I think that eventually glass will be preferred, since it obstructs no light, and will in practice be found as strong as the wire.

I have before stated that I intended to construct an oil lamp upon similar principles. While some colliers will prefer candles, others will prefer oil; I therefore considered it my duty to invent one for the latter's use. I found this to be a much more difficult task than the former; but I have the pleasure to announce that this month I have succeeded. My safety oil lamp is termed the "lunar" lamp. It affords a brilliant light, is easily trimmed, is less bulky than the lantern, and is made at a less cost. It will be found quite original, and perfectly safe.

I withhold any particular description at this time, but intend shortly to furnish you with one. I am neither maker nor seller of the article; my only wish is to make my inventions publicly known, in order that their

merits be tested, and that coal masters be induced to give my system a fair trial. An uncommon prejudice exists against any change; but I do think that the undeniable fact of explosions still occurring will, ere long, uproot such prejudice in favour of an unsafe system, in the minds of at least sensible and humane individuals. The knowledge of the fact, that at the present time other parties are reinventing my lamps, and recommending my system as their own, instead of discouraging, gives me fresh courage to labour in the cause, and increases my hopes of ultimate success; because I know very well that such parties would not appropriate my recommendations to their own selfish purpose, if they considered such recommendations to be valueless. Robbers never steal things they know to have no value; nor do wasps attack bees whose hive is honeyless. J. CRANE. *Birmingham, Nov. 29.*

#### THE SMOKE QUESTION.

SIR.—It is amusing to see the rivalry of parties now that the Act, in reference to the smoke nuisance, has become operative. Mr. Williams, I see, still affects to believe that smoke cannot be consumed; while others, founding with greater show of reason their patents on the datum, that containing as it does an inflammable principle, in the shape of carbon, assert that it can; and even Mr. Williams will not venture to say, that soot, the product of smoke, is non-combustible, because the fiery chimnies, of too common occurrence, would contradict the assertion. The means to be adopted for the prevention of smoke are of a twofold character—viz.: the complete or perfect combustion of the fuel in the first instance, as by Mr. Williams's method; and by the subsequent combustion of the smoke, produced in the act of combustion—equally efficient, I venture to contend, with the other.—J. MURRAY: *Portland-place, Hull, Nov. 24.*

#### GAS FROM MATERIALS COMBINED WITH WATER.

SIR.—It seems now uniformly admitted, that water may be decomposed at a certain temperature, in contact with carbonaceous matter, and yield its hydrogen to form a gas, adequate to the purposes of illumination. When I enunciated the proposition, in 1818, that water would eventually become an article of fuel, though substantiated by experiment, the announcement only excited ridicule; but the grounds on which the inference was founded, has long been before the public. As far as I understand them, the more recent investigations and elaborations on the production of gas from resinous or bituminous matters and water, are merely a new and modified version of Rutherford's experiments with tar and water, and those of a continental chemist, about the same period.

Portland-place, Hull, Nov. 24.

J. MURRAY.

#### PREVENTION OF FIRES IN CHIMNIES.

SIR.—I was startled by the announcement of the proposed application of wire gauze for the prevention of fires in chimnies, as originated, it was stated among your paragraphs, on the part of some one on the continent.

Four or five years ago, I proposed and recommended to an architect, of Newport Pagnell, the application of wire gauze screens for the double purpose of preventing fires in chimnies, by intercepting flame, and attenuating, if not destroying, smoke, by an instantaneous deposition of soot, both which objects were warranted by the relations of wire gauze to flame, and its immediate products. That I advance no "posthumous" claim, Messrs. Bull, of Newport Pagnell, will bear me witness. J. MURRAY. *Portland-place, Hull, Nov. 24.*

#### ARTIFICIAL GEMS.

SIR.—Some time ago I remember there was a paragraph in your pages descriptive of a mode of forming artificial gems, wherein fused boracic acid was the requisite element. Perrott, of St. Petersburg, advocated, a few years ago, the notion that the diamond was the product of volcanic action on carbon. Certainly (though I entirely demur to Perrott's assumed origin of the diamond), boracic acid is by no means an infrequent product of the volcano. I found it in the *fossa grande*, near Vesuvius, and the late Earl Mountnorris gave me a specimen of boracic acid he had discovered in Vulcano, one of the Lipari islands—the seat of active fires.

Portland-place, Hull, Nov. 24.

J. MURRAY.

#### EARTHENWARE PIPING.

SIR.—In reply to your correspondent, "S. G.," of Cardiff, I may be permitted to say that I consider an internal glaze for the earthenware pipes altogether unnecessary. Earthenware pipes, for the conveyance of water, should be so deeply infired in the earth as to be unaffected by the agency of frost, lest the water absorbed by the porous earthenware in the act of expansion, by freezing, should rend the pipe. The application of gas tar to the pipes, when embedded, as an external coating, would act as an insulator in reference to external temperature, and operate as a defence against the influence of frost.—J. MURRAY: *Portland-place, Hull, Nov. 27.*

#### THE ELECTRO LIGHT.

SIR.—Your facetious correspondent, Mr. Rogers, of Nantyglo, is pleased to assign to me an antiquity to which I have no pretensions—"Threescore years" is nearer the gauge than the "three score years and ten"—man's allotment of life. "Few and evil have been the days of the years of my pilgrimage."

The electro light seems best developed through carbon as a medium, but is a light independent of it, for it can be developed without its intervention; moreover, not only can the electro light be sustained in media that are inflammable, and thus antagonistic to supporting media, but also in gases altogether antagonistic to both, such as nitrogen—the latter, too, a simple and not a compound gas. Add to this the electro light can be manifested and sustained in a *torricellian vacuum*—Davy made the experiment. In these two instances no chemical change can be possibly occur. I consider the electro light identical with that of the sun, and, as in the latter case, not to be estimated by the chemistry of combustion. Intense temperature in such media might volatilize the carbon, but can effect no chemical mutation whatever. I believe the light to arise from the conflict of contending electricities.—J. MURRAY: *Portland-place, Hull, Nov. 27.*

#### THE ELECTRO LIGHT.

SIR.—Your correspondent, Mr. S. B. Rogers, inquires, in last week's *Journal*—"What becomes of the charcoal in the electro light?" The question naturally suggesting itself on reading Dr. Murray's remarks on the subject, in the previous week, where he states—"That the light is entirely independent of the ambient medium, and effects no chemical change on its condition, and that no deterioration of the air can supervene from its use." In answer to Mr. Rogers, I may state, that some time ago, when engaged in a few experiments, for the purpose of eliciting information on that particular head, I came to the conclusion, that if the charcoal points were rendered incandescent by galvanic influence, the interposition of atmospheric air being admitted, its oxygen was converted into carbonic acid, leaving a white ash upon the extremity of the charcoal, proving that a chemical change of the atmospheric medium does take place, that a noxious gas is substituted for, and at the expense of, the vital constituent; yet it is equally true that this most brilliant light can be produced and sustained for an unlimited period, in a medium wanting oxygen, and, probably, in *vacuo*, thus existing without the ordinary supporter of combustion; but, under these latter conditions in the experiments before alluded to, the charcoal point terminating the positive pole, became more obtuse, and diminished, whilst the negative extremity increased apparently in the same proportion. I, therefore, inferred from this, that there must have been simply a molecular transfer from one point to the other; with this statement, which may elicit further information from the master mind of Dr. Murray, or others of your correspondents, which I shall be glad to avail myself of, I will cease further to encroach upon your valuable space.

Holywell, Nov. 28,

J. C. ROBERTS.

#### THE ELECTRO LIGHT.

SIR.—There can be no doubt it is to the admirable invention of the constant battery, by the late Prof. Daniell, that we are indebted for the applications of galvanism to the blasting of rocks, and to the arts of electroplating and gilding. Since its discovery, many attempts have been made on the continent by MM. Boussingault and De la Rive, and by Mr. Grove in this country, to extend its application, particularly as a source of light. Some of these efforts have been partially successful, both with the disruptive discharge and the ignition of the galvanic arc; but it will be admitted that, if Mr. Staito can sustain for hours the brilliant light of the disruptive discharge, he has made a most important step in advance of these gentlemen; and if Mr. Staito has overcome the peculiarities of iron, as a positive metal in the ordinary exciting fluid of the galvanic battery, I do not think there can be a doubt of the success of the light in an economical point of view. The substitution of iron for zinc, would alone enable the light to be produced at one-third the cost. It has long been anticipated that,

if this light could be economically sustained, it would be invaluable in the lighting of mines; I do think, therefore, that Mr. Staito could not have a better prospect than a trial of his light in the mines of Cornwall; for at the mines in that county, it is practicable to sell with profit two of the most common ingredients of the voltaic battery—viz.: sulphuric acid and sulphate of copper; the former of specific gravity 1750, at 2l. 6s. 8d. a ton; and "chamber acid" cheaper, than in proportion to its specific gravity; and the latter at 12l. a ton, instead of the London prices of 7l. and 38l. respectively.—WILLIAM BIRKMYRE: *Dec. 1.*

#### DISTILLATION OF PEAT.

SIR.—I have been much interested by the letters of your intelligent correspondent, Mr. J. W. Hodgetts, on the subject of obtaining charcoal from peat; and I sincerely hope, that the praiseworthy efforts of himself and his friends, for the attainment of this truly national object, will be crowned with success. Amongst the products enumerated by Mr. Hodgetts, as being obtained by the distillation of peat, I observe that no mention is made of pyroigneous acid, which I know to be one of the most valuable products derived from the distillation of wood, and, I presume, it is also obtained from peat. Perhaps Mr. Hodgetts will inform your readers upon this point, stating whether this product is obtained equally abundantly from peat as it is from wood. I should also be much obliged by some further information as to the vegetable tallow, or stearine—viz.: whether this possesses such properties, as would render it a substitute for Russian tallow in the manufacture of candles and soap? also, whether the quantity obtained is such as would render it an important article of commerce. I trust Mr. Hodgetts will excuse my troubling him with these inquiries, as the subject must be of great interest to him as well as to your readers.

Nov. 28.

W. G.

#### SIR W. BURNETT'S CHLORIDE OF ZINC AS A DISINFECTANT.

SIR.—Having seen, in your *Journal* for last week, a letter from Dr. Murray, of Hull, respecting peat-charcoal as a disinfectant, wherein he refers to certain experiments conducted at Stourbridge with this material, and the fluids of Sir William Burnett, and Messrs. Ellerman and Co., I beg that you will permit me, through the medium of your *Journal*, to say that, as there are several imitations and modifications of Sir W. Burnett's chloride of zinc offered for sale, it is unfair, as in this case, that comparative experiments should be made and published without any communication being made with the proprietors of Sir William Burnett's patent, so as to secure not only purity and strength of material, but a right application of it, and particularly as the object of the parties making these experiments is to prove their own best. One of the specimens of "chloride of zinc," sold in half-pint bottles at 1s. 3d., I have just analysed. Its specific gravity is 1.059. It consists of chloride and sulphate of zinc, with chloride of lime in small quantity. The per centage of zinc is only 2.24; while in a solution of chloride of zinc alone, of the same gravity, it is 3.43. One fluid ounce of Sir William Burnett's solution (as sent out in quart bottles, of specific gravity 1.600), when added to 12 fluid ounces of water gives a fluid of greater specific gravity; therefore, Sir William Burnett's fluid, which sells at 3s. per quart, is 12 times stronger and 20 times cheaper.

London, Nov. 30.

WILLIAM GLASS.

#### PRACTICAL MINING.

SIR.—Enclosed is a form for determining the place of meeting, in any given pit, of two flat ropes, winding upon the same shaft. If you think it will prove useful to any of your numerous readers, I shall be glad if you can find room for it in your valuable *Journal*.

Given, circumference of rope-drum, when load is at bottom =  $c$ , thickness of rope =  $t$ , and number of revolutions required to bring the load up =  $N$ , to find the place of meeting of the ascending and descending ropes. If  $t$  = thickness of rope,  $2t \times 3.1416$  is the quantity by which each successive revolution of the drum is greater (or less) than the preceding one, =  $i$ , suppose—

Let  $C$  = circumference of drum, when rope is up.

$d$  = depth of pit.

Then  $C = c + Ni$ , which determines  $C$  . . . . . (1)

$\frac{1}{2} \{ 2c + N - 1 \} \frac{N}{2} = d$ , which determines  $d$  . . . . . (2)

Now, if  $n$  = number of revolutions after which the meeting occurs, we must have—

$\frac{n}{2} \{ 2c + n - 1 \} \frac{n}{2} + \frac{n}{2} \{ 2C - n - 1 \} \frac{n}{2} = d$  . . . . . (3)

Or  $n = \frac{d}{C + c}$ , whence  $n$  is found . . . . . (4)

If the meeting took place exactly half way down, we should have—

$\frac{n}{2} \{ 2c + n - 1 \} \frac{n}{2} = \frac{n}{2} \{ 2C - n - 1 \} \frac{n}{2}$

Or  $C = c + n - 1$ .

But from (1) . . . . .  $C = c + Ni$ .

$\therefore c + Ni = c + n - 1$ .

$\therefore n = N + 1$ , or a part is greater than the whole, which is impossible; therefore, the ropes cannot meet in the centre.

Ex.—Let  $c$  = 15 feet  $N$  = 20,  $i$  =  $\frac{1}{6}$  of a foot.

From (3)  $\frac{n}{2} \{ 2c + n - 1 \} \frac{n}{2} + \frac{n}{2} \{ 2C - n - 1 \} \frac{n}{2} = d$ , wherefore substituting

$d = 10 \{ 30 + 19 \times \frac{1}{6} \}$

$= 414$ .

From (1)  $C = c + Ni = 15 + 20 \times \frac{1}{6}$

$= 27$ .

From (4)  $n = \frac{d}{C + c} = \frac{414}{27 + 15} = \frac{414}{42}$

$= 9.85$ , and substituting this value for  $n$ , in (3) we have

$\frac{9.85}{2} \{ 30 + 8.85 \times \frac{1}{6} \} = 173.67$ , height of meeting place.

$\frac{9.85}{2} \{ 54 - 8.85 \times \frac{1}{6} \} = 239.55$ , depth of ditto.

$413.22$ , depth of pit nearly.

Bickershaw Colliery, Wigan, Nov. 21.

J. C. B.

#### ELECTRO-MAGNETISM AS A MOTIVE-POWER.

SIR.—Considering the vast improvements made in every branch of science during the past 20 years, and, probably, we may consider in electro-magnetism, equal to any, it does appear to me surprising, that its great important feature—its application as a motive-power—appears completely lost sight of. It is six years since Mr. Davidson, of Edinburgh, exhibited his highly interesting arrangements in London; nor have we heard of him, or scarcely of the subject since. I have long taken great interest in this branch of science, but have not the means to carry out experiments to elucidate my views. I was in great hopes that I should soon be enabled to find, that some scientific men were still pursuing this interesting investigation, by observing, among your list of patents, in the columns of the *Mining Journal* for Oct. 28th last, that one was granted to Soren Hjorth, *Jury-street, Aldgate*, "for certain improvements in the use of electro-magnetism, and its application as a motive-power; and also other improvements in its application generally to engines, ships, and railways." Here, however, I was again doomed to disappointment. I spent an hour one day in *Jewry-street, Aldgate* (I could find no other; you observe the name is spelt different), in endeavouring to find this patentee, but to no purpose; I not only inquired in *Jewry-street*, but Crutchedfriars, the cross streets, and scanned all the names on the doors; but though there are numerous foreigners in that locality, I could not find one with this very peculiar cognomen. Should this meet the eye of Mr. Soren Hjorth, and if he, or any of his friends, will communicate, through your columns, the slightest information on the subject, it will be considered a great favour by many of your readers besides.—GALVANO: *Old Kent-road, Nov. 26.*

TESTIMONIAL TO MR. ANDREW RAY, ENGINEER TO THE PENDLETON COLLIERIES (FITZGERALD'S).—Mr. Ray, who has been so successful in putting the Pendleton pits into working condition, after the disastrous flooding which had long rendered them useless, was entertained by a party of gentlemen, at the Horse Shoe Inn, Pendleton.—Mr. Nathan Gough, C.E., in the chair.—After dinner, an elegant silver snuff-box, together with a purse of gold, was presented in the name of the subscribers. The lid of the box was thus inscribed:—"Presented to Mr. Andrew Ray, Engineer, by a few friends, in acknowledgement of his enterprise and talent displayed by him as engineer for the Pendleton Collieries, in restoring the works after the disastrous inundation by which they were immersed, to the depth of 454 yards, for a period of 18 months. November, 1848."—*Manchester Examiner.*



## THE MEXICAN DEBT.

TO THE EDITOR OF THE MINING JOURNAL.

SIR.—There are so many persons interested in the very large debt owing to Englishmen by the Republic of Mexico, that I shall feel obliged by your permitting space for allowing the following letters on the subject (which I have just received) to appear in your columns; for I cordially agree with the ideas there put forth for the future proceedings of the bondholders.

City, Nov. 29.

## AN UNFORTUNATE BONDHOLDER.

MY DEAR SIR.—As I sent to you a copy of my letter to the chairman of the committee for the Mexican bondholders, I also send you what was published in the *Daily News* on the 23d inst.; since then, I have been informed that fully 140,000l. have been paid by the Mexican Government to the bondholders' agents (C<sup>o</sup>s). But who made these appointments—and have the persons so appointed, not also the power and the authority to annul such appointments? Quirks and quibbles seem to have commenced, and may long be continued, much to the prejudice of the poorer and the needy bondholders, and also prejudicial to that once high character enjoyed by English merchants throughout the commercial world, and until the "licence trade" commenced, and almost annulled the race of those of the old "caste" of high probity; but each prison-house has its secrets—for in some you forfeit solely your worldly goods, in others you slowly lose your life.

I gratefully recollect the reception given to me by the merchants of plodding Austria in 1813. I went there as the agent for the Lords of the Treasury, to obtain dollars for their bills, which the Austrians previously had never seen; but the commercial introductions I took, and their recollections of the old mercantile character of the English, induced them readily to purchase these bills, although they could hardly believe they were Government paper.

Tell the bondholders not to allow their property out of their own control—it ought never to be in the sole power of any one individual; and if my consent were solicited, from being a mercantile man, I would object to their funds being in the hands of any commercial house, however high its character and position. The bondholders needed not, had they been properly advised, any third parties to have represented their interests, and they could have proceeded without what I deem an improper intervention; but, from the first, they seem to have forgotten the moral of the *Asiatick Company*—*Adieu*, *et Dieu s'aidera*, and too readily lent themselves to an intended deception; yet the Foreign Office might assist them, if properly applied to, and after they shall have had a meeting of bondholders, to which Mr. G. R. Robinson should be invited to attend in his double capacity.

I have been asked, whether the Government of Mexico would hesitate to acknowledge such bonds as might now be given out, in exchange for others that should be lodged with Messrs. J. Schneider and Co. P. (I am just told there must be fully two millions outstanding for want of this necessary confidence). Can you ask for, or inform, me on this head? I have advised the parties not to let their bonds go out of their own possession under such unsettled circumstances, for the Mexican Government might justly repudiate all present conversions; therefore, do I more and more feel that the Foreign Office can solely place all these matters in due course of arrangement; and the correspondence I have had with Lord Palmerston and Aberdeen shall, at an early day, be given to you for your perusal.

Dunbridge Wells, Nov. 28.

J. W. D.

P.S. I would suggest, that some of the most influential bondholders call a meeting, to ascertain the views of the general body on the subject.—J. W. D.

The following is the letter which appeared in the *Daily News*, on the 23d inst.:

SIR.—About a year since you obligingly put into your columns a letter from me regarding the 115,000l. (circa), in the hands of a mercantile firm, and then supposed to be towards the payment of Mexican dividends. Another year now passes, and two more dividends are due, but the bondholders have not yet had any portion of these funds, and unless the chairman of the committee for the bondholders shall interfere for them, and protect their interests, the committee now is improperly constituted, and he also intimates that it no longer fairly represents those interests, which at first it might have done) the future, termed the "Greek kalends," it will be the sad fate of the Mexican bondholders to attempt to foretell the advent of, ere their dividends may be regularly divisible amongst them. I perceive that more dollars are either now arrived, or are on the way. I should wish to know, therefore, who are, in London, the agents of the bondholders? Have they any? For, at a late meeting, it seemed that Messrs. J. Schneider and Co. did not acknowledge themselves to be such, and the Mexican Minister long since assured me that they (J. S. and Co.) were no longer the agents for his Government; and he also intimated that after the payment of moneys to the appointed persons in the Mexican ports, his Government was absolved from all future risk. The case would seem to be that Messrs. J. Schneider and Co. have 115,000l., or should have, to pay a dividend, but this amount falls short of a whole dividend. Yet Messrs. Lizardi, on the 23d Nov., 1843, paid one-third of a whole dividend; also one-half of the October dividend, on the 9th April, 1844; the remaining half, I can suppose, just as the funds in hand answered. Should no more funds be entrusted to Messrs. Schneider and Co., and the Exchequer Bill, if bought (at the time I did) at 30s., 35s. discount, and now to be readily sold at 45s. premium, not make up the deficiency for a whole dividend; what is ultimately to become of this large sum? I unfortunately represent the case of orphans, who, in 21 years, have only received altogether 391l. 18s. 10d., instead of, at 180l. per annum, 3780l. (Ten of these years elapsed without any payment occurring, for it was in 1827 that these bonds cost them 2007l. 10s.) Whilst the subjects of other states, with claims on Mexico, have been paid from the intervention of their Governments, the English creditors alone have been left without that assistance, and which, more than others, they had the first right to receive, for their were long antecedent debts. In these precarious times it surely behoves the bondholders to see that no more money shall be placed out of their own control.—J. W. D.

Dunbridge Wells, Nov. 17.

**MUTUAL ASSURANCE SOCIETY.**—An extraordinary general meeting of this society was held at the King's Head, Poultry, on Wednesday last, to elect a director in the room of John Cole, Esq., deceased. The attendance of directors and members was very numerous, and James Whiskin, Esq., presided.—The Chairman introduced the business, by stating that the meeting had been convened for the purpose of appointing a successor to the late lamented Mr. Cole, who had so ably filled the office of director in that institution for a considerable term of years. Mr. Hardy (the actuary), then announced that the following gentlemen were candidates for the vacant seat:—Mr. John Mollett, merchant, City; Mr. Haynes, manufacturer (and son of a deceased director); Mr. Richard Morris; and Mr. Pritchard (one of the auditors of the society). Mr. William Burchell proposed, and Mr. Simpson seconded the nomination of Mr. Haynes; and Mr. Joshua Bates, seconded by Mr. Powles, nominated Mr. Mollett; and the remaining two candidates, Messrs. Morris and Pritchard, announced their intention to retire from the contest.—The latter gentleman, however, expressed his determination to solicit the members' suffrages whenever another vacancy occurred. After a lengthened discussion, a show of hands was ultimately taken of the supporters of Mr. Mollett and Mr. Haynes respectively, when the result was declared by the chairman to be in favour of Mr. Mollett. A poll was then demanded on behalf of Mr. Haynes, which is to take place on Tuesday week, and the proceedings terminated with a unanimous vote of thanks to the chairman.

**HUNGERFORD MARKET COMPANY.**—The half-yearly meeting was held at the company's office, Villiers-street, Strand, on Thursday last.—Mr. MARTIN STUTELY in the chair.—The report of the directors stated, that a satisfactory arrangement had been effected with the Charing-cross Bridge Company, for terminating all legal disputes between the two companies; and expressed a hope that for the future the most friendly feeling should reciprocally exist between them. It then adverted to the extensive improvements now being made in the fish market, and congratulated the proprietors on the fact, that the profits of the year warranted an increased dividend on the present occasion. The report was cordially adopted, and a dividend of 2l. 10s. per share declared; and, after voting thanks to the chairman, the meeting separated, highly gratified with the improved condition and prospects of the company.

**THE PATENT ELECTRIC LIGHT.**—At the Society of Arts, on Wednesday evening last, some very beautiful experiments with the light apparatus of Messrs. Staitie and Petrie, accidentally led to the development of several phenomena of great philosophical curiosity. The galvanic light was burning in all its splendour, concurrently with the great Bude light in the centre of the room, when, on being intercepted by an opaque object, it was observed to throw a yellow shadow on a sheet of paper. This novel and singular circumstance may be accounted for in this way. The room was filled at the time with the comparatively yellow light of the lamp, but it was dispelled upon the paper by the superior brilliancy of the light from the charcoal. This happened everywhere, excepting only in one place—that in which the object prevents its approach, and there, consequently, the shadow participates in the yellow colour then incidental to the light of the room. The light was most concentrated by a convex lens, and projected on a white speculum, in which also stood the shadow of a burning wax candle. From the summit of the shadow proceeded a mass of shadowy vapour, showing the existence to a greater extent than could have been supposed, of imperfections in the purest wax lights. The outside of the flame was distinguished by a bright outline, a circumstance attributable, no doubt, to the dispersive action of the rarefied medium which envelops the flame itself. These and some other facts are to be explained in detail in a paper which these gentlemen are to introduce upon the subject shortly, pointing out the means of regulating and rendering the light permanent, by a self-acting electrical arrangement, till which time we defer further notice.

**GUTTA PERCHA.**—This article continues to be imported in very large quantities, in order to meet the demands which are made for it, to be appropriated to the very numerous purposes to which it is now found to be applicable. A vessel just arrived in the docks, from Singapore, has brought what we believe to be the largest importation ever made at one time, consisting of 3294 packages, 710 lumps, and 10,441 blocks of the article.

**HALIFAX AND QUEBEC RAILWAY.**—A meeting, most numerously attended by many influential gentlemen and members of the Provincial Assembly of Nova Scotia, was held at Amherst, Nova Scotia, on the 6th Oct. last, for the purpose of promoting the proposed railroad from Halifax to Quebec. The meeting was called at the instance of W. H. Buckfield, Esq., and presided over by E. McGowan Dickey, Esq., M.P.P. The following resolution was unanimously adopted:—"That, considering the immense advantages that must accrue to British North America in general, and to Nova Scotia in particular, by the construction of a railroad from Halifax to Quebec, this meeting pledges itself to active co-operation with the promoters of this great work; and to contribute, as occasion may require, and in proportion to their means, towards its completion." A committee composed of more than 30 of the gentlemen present was chosen to carry out this object; and to hold meetings, collect subscriptions, &c. W. F. Moffat, Esq., was appointed secretary, and R. McGowan, Esq., treasurer. Various names were subscribed, and paid to the treasurer, for which the thanks of the meeting were voted to W. H. Buckfield, Esq., for the warm interest he had manifested in the promotion of the Halifax and Quebec Railroad, the meeting adjourned to January, in order to allow the committee time to hold meetings in the different districts of the province.—*Emigrant.*

## IMPROVEMENTS IN THE MANUFACTURE OF OXIDE OF ZINC.

Under a patent granted to Mr. W. E. Newton, of Chancery-lane, for preparing oxide of zinc, the following is the mode of operation:—1. Metallic zinc is introduced in the form of ingots into retorts in a furnace of peculiar construction (which cannot be described without a diagram), previously heated to a white heat; and when they are completely charged, the trap-door in the flooring is to be raised, so as to put the retort in direct communication with the oxidizing chamber. The zinc passes off in the state of vapour, becomes oxidized by the air from the air-pipe, and is drawn into the chamber by the exhaustion which is constantly maintained; it is there arrested by a wire-gauze partition (which, however, allows the air to pass), and deposited in boppers, from which it drops into receptacles placed below. When the retort is exhausted, the trap-door in the flooring is lowered, the retort is recharged, and the operation proceeds as before. If zinc ore, or oxide of zinc be operated upon, it is mixed with half its weight of coal, coke, or earth, in the ordinary manner of treating zinc ore. If uncalcined blende (native sulphuret of zinc) be operated upon, it is necessary to add to the mixture a quantity of peroxide of manganese, carbonate of lime, or oxide of iron, proportioned to the quantity of sulphur it contains.

2. In operating by means of a blast-furnace.—The furnace is to be charged with the ore, mixed with the substances above mentioned, and also with a sufficient quantity of flux suitable to the nature of the scoria. As the zinc separates from the other substances with which it was combined, it passes off in a state of metallic vapour, which becomes oxidized, and is driven or drawn into the oxidizing chambers, and collected as above described.

3. When employing reverberatory furnaces, or those similar to coke ovens.—The working of a reverberatory furnace is so well known, that it is unnecessary here to describe it; the charging and cleansing is conducted in the same manner as when operating upon other ores; this method is not, however, so convenient as the others. When furnaces like those employed for making coke are employed, it is only necessary to charge them, when heated to a high temperature, with the metal or oxide of zinc, either alone or mixed with coal or with ore, through the ordinary door, or through an opening above, or at the side. A current of air must be passed, either through the furnace, or to the orifice of the pipes leading to the collecting chamber, in order to convert the metallic vapour into oxide of zinc or zinc-white. In operating upon the metal with this or an analogous form of apparatus, the melted zinc might be allowed to fall in drops, like rain, by means of a sieve above.

4. In operating with the horizontal tubular furnace.—The furnace is heated to a suitable temperature by means of coal or coke; the mixture of ore and coke or coal is then fed in, to which may be added (according to the arrangement) a certain quantity of flux, such as alumina, and carbonate of lime, or other substance, according to the nature of the scoria or residuary matters, care being taken to leave the upper part free. In treating uncalcined blende, a certain quantity of carbonate of lime, peroxide of manganese, or oxide of iron, must be mixed with it, according to the quantity of sulphur it contains. The ore is decomposed, and the zinc goes off in the state of metallic vapour, which combines with the oxygen, and forms oxide of zinc, which passes into the collecting chambers, towards which it is continually driven or drawn, as above mentioned. Immediately after charging, and until the charge has become incandescent, gases and solid although light bodies will be given off, which may find their way into the collecting chamber, and would spoil the whiteness of the products. To remedy this two chambers are employed, one at each end. One of these chambers is intended to receive the products which escape before the charge has become incandescent; and, therefore, immediately after charging, the register of the chamber intended to receive the most pure products is closed, whilst that for the reception of the impure vapours is left open. This latter is closed when pure zinc-white begins to be formed, and the other opened. The collecting chambers, and all the other parts, are arranged as described.

## GEOLOGY OF THE NEIGHBOURHOOD OF LIVERPOOL.

We have received a communication from Mr. T. M. Gladstone, C.E., calling attention to some remarks of his addressed to the *Liverpool Standard*, on the subject of ascertaining correctly the geological nature of the strata in Liverpool and its neighbourhood, not merely as regards the question of raising water for the supply of the town, but with the view to ascertain if any, and what minerals form the stratum at greater depths than has yet been penetrated in that neighbourhood. Mr. Gladstone considers it probable that the great coal-field of the Lancashire basin may be bored through, and if so, a cheap supply of good coal at their very doors, would tend more to relieve the inhabitants of the burdens of taxation than perhaps any other circumstance which could occur. In his observations in the *Liverpool Standard*, he states, that while in almost all parts of the country the geological formations have been proved to depths which give satisfactory evidence that it is unnecessary to proceed lower, a district lying between the Yorkshire hills on the north-east, and the Welsh mountains on the south-west, has been only to a certain degree partially examined. Following the directions of Nature, first, north-east of Liverpool, the great coal-field of Lancashire is seen in the neighbourhood of Wigan, a higher strata near the town of St. Helens, and, nearer still, close to the "Old Swan." In the south-west there are the coal strata cropping out at Neston, in Cheshire, and beyond that again in Flintshire, and the coal and every other formation is closed by the primitive rocks of Wales. In the neighbourhood of Leasowe Castle the remains of a great forest are seen descending below low-water mark towards the north-east, and, at a corresponding point at Formby, the same forest rises as it were out of the water, pointing out the fact that at some former period both were united, while the intermediate space is now covered by vast sand banks, probably becoming converted into sandstone, similar to that on which Liverpool rests: 600 feet, it appears, is the lowest depth attained in Liverpool, under the attempt to supply the town with water from that source, which is not half the depth Mr. Arago went at the artesian well at Grenelle, and this Mr. Gladstone considers by no means satisfactory, and he believes that if a sum, comparatively trifling in amount, was laid out in proving the strata to a greater depth, not only would a vast supply of water be obtained, but the coal-fields in these lowest depths would be discovered, which alone would repay ten thousand times over all the expense, and be of immense benefit to the inhabitants. He states that only a short time since he had to survey a colliery in Derbyshire 275 yards deep, and from two pits, of which 300 tons of coal per day were raised, which is nothing to the collieries of Durham and Newcastle; he considers it not unusual, or unreasonable, in the present advance of science, to go far deeper than has been done in Liverpool, to bring to light the hidden riches of the earth with safety and success.

**RAILWAY CALLS.**—The amount of calls advertised for December month is 1,305,694l. against 2,423,820l. for the corresponding period of 1847. It is probable that some further additions may yet be made; but the comparison of the total calls, as they now stand, for the 12 months of 1848 with those of 1847, shows an aggregate of 33,069,848l. against 42,071,893l.

**CHESTER AND HOLYHEAD.—GREAT BRITANNIA TUBULAR BRIDGE.**—The works of this great structure, which are twice the stupendous character of those over the River Conway, have been put in full operation this week, and are already in an advanced state. The platform for this purpose, across the Menai Straits alone, is half a mile long, and four large tubes, each weighing 1700 tons, are now nearly completed. Each tube is 472 ft. long, and will have to be floated half a mile along the Straits, and then raised 106 ft. home. The total weight to be raised this height, will be 1800 tons, which is 300 tons more than that of the *Great Britain* steamer, with her hull, rigging, engines, and boilers. The end tubes are also much advanced, and they are constructed on the largest mass of scaffolding ever erected. The scaffold or platform on which they are being put together is 100 ft. high, 230 ft. long, and 60 ft. broad, capable of sustaining a weight of 1500 tons on the top. The cast-iron work of the bridge weighs upwards of 2000 tons, and the chains used for raising it will alone weigh 100 tons. It will be floated on eight pontoons. Two of them are of iron, 100 ft. long, 28 ft. broad, 10 ft. deep, and capable of carrying 400 tons each. The middle pier, rising out of the water, from the Britannia rock, after which the bridge is named, is 62 ft. broad, by 56 ft. wide. The blocks of stone are 7 and 8 ft. long, and they rise, stone upon stone, until the pier is 230 ft. high. There are two other piers of the same elevation, and the entire length of the tube bridge across the Straits, is 1420 feet, or nearly one-third of a mile. The entire experiments and processes are carried on under the superintendence of Mr. E. Clarke, C.E., who is entrusted with them by Mr. Robert Stephenson, the engineer of the company.

**DUBLIN AND HOLYHEAD.—SUBMARINE ELECTRIC TELEGRAPH.**—Mr. C. Blunt, C.E., has received, from the Lords Commissioners of the Admiralty, the necessary authority to lay down his line of submarine electric telegraph between Holyhead and Dublin, and for putting the wires in communication with the existing lines of railway now terminating at Holyhead on the English coast, and on the Irish coast at Dublin.

**DUBLIN AND BELFAST JUNCTION.—FIRST TRIAL TRIP.**—On Wednesday the first trial trip, under the personal inspection of Sir John Macneil, was made on that part of the line between Drogheda and Dundalk. The trip was performed in 58 minutes, including two stoppages. Sir John was accompanied by the contractors, Messrs. Killen and Moore, and a number of engineers. On arriving at the Drogheda terminus, Sir John was received with hearty cheers by the assembled people. Thomas Simcocks, Esq., mayor of Drogheda, some of the town council and other gentlemen of the town interested in the success of the undertaking, were in attendance awaiting the arrival of the train. The state of the line reflects great credit on Messrs. Moore and Killen, as it was pronounced to be as firm and even as some lines which have been at work for years.

**OPENING OF THE ARDWICK EXTENSION OF THE LANCASTHIRE AND YORKSHIRE.**—This extension, which has just been opened, unites the Lancashire and Yorkshire on the north, when the London and North-Western and Manchester, Sheffield, and Lincolnshire Railways on the south. It has been constructed for the accommodation of the immense merchandise traffic of these districts, which has hitherto greatly felt the want of the facilities of a free circulation. The constructive cost has been 120,000l. and is being paid off by

## IMPROVEMENTS IN THE MANUFACTURE OF ZINC.

(In the *Mining Journal* of September 9, we gave a notice of the improvements effected in the treatment of zinc ores by Mr. C. A. F. Roehar, of Paris. We are now enabled to present a detailed description, with the requisite engravings, for which we are indebted to our contemporary, the *Civil Engineer and Architect's Journal*.)

This invention consists, firstly, in improvements in the treatment of zinc ores; and, secondly, in improvements in manufacturing oxide of zinc.

First, as regards the treatment of the ores of zinc.—This process has usually been effected by first converting them into the state of oxide, by roasting or calcination, and afterwards reducing and distilling the oxides, by mixing them with coal, and submitting them to great heat, in close vessels or retorts. This mode of operation is attended with great disadvantages, for, besides occasioning great consumption of fuel, and rapid destruction of the retorts, the product obtained is by no means proportionate to the richness of the ore. By this improved process the employment of retorts is entirely dispensed with, and the fuel and labour are greatly economised; the operation is also completely independent of the skill of the workman or attendant; and, lastly, the loss of metal incidental to the ordinary method is prevented. Besides these advantages, the patentee observes, that ores of lead and zinc may both be operated upon at once by this improved method.

The principle feature of the invention consists in the reduction of roasted blend ore (native sulphuret of zinc), and of the carbonates, oxides, or silicates of zinc, and also of the sulphurets and oxides of lead, by the action of the reducing gases of a blast furnace, by which the scoria or slag is fused, the reduced zinc volatilised, and the vapours condensed, and conducted into a receiver of a peculiar form, situated over the mouth of the furnace, and heated by the gases therefrom.

Fig. 1.

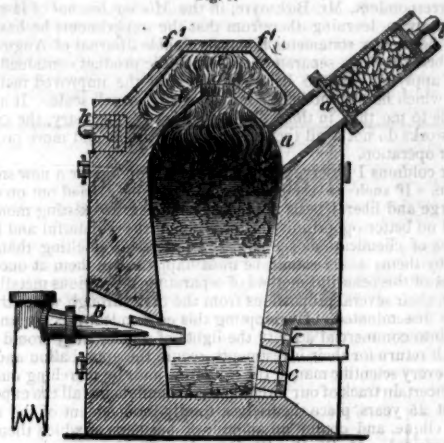


Fig. 2.

Fig. 3.

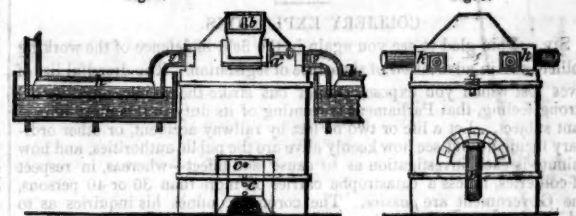


Fig. 4.

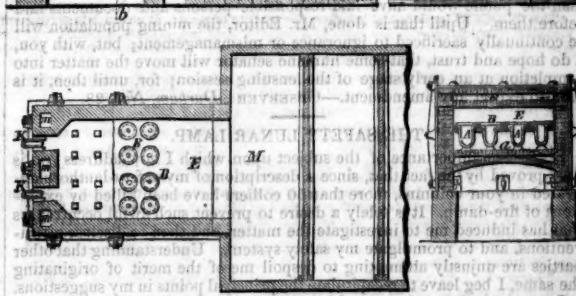
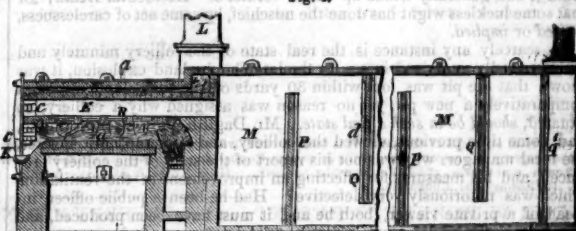


Fig. 6.

Fig. 1 represents a vertical section of the furnace, taken in a line with the tuyère holes; fig. 2 is an elevation of the same, on that side where the aperture for charging is situated, the condensers being shown in section; and fig. 3 is an elevation of the furnace, on the side where the tuyère pipes are situated: a, is the aperture or channel for charging; a', is a sliding partition; b, the outer door or cover for closing the charging channel; c, c', c'', are apertures through which the scoria runs; d, is an opening between the body of the furnace and the receiver, e, the lower part of which is formed by the cover or partition, f, at the top of the furnace; and the upper part by another cover, f', larger than the lower one, forming a kind of channel, in which the zinc is condensed; g, g' (fig. 2), are openings for the escape of the gases; h, is a hydraulic main; i, is the tuyère or blast pipe; and k, h, are openings for extracting the zinc and any extraneous matters; these openings are luted every time the metal, &c., is run off.

The mode of operation is as follows:—The furnace having been heated to the required temperature, by the combustion of fuel alone, a charge of zinc ore, either in the state of oxide, carbonate, or silicate, mixed with any suitable flux, according to the nature of the ore, is introduced into the charging aperture, a, between the sliding plate, a', and the door, b; so that by drawing out the slide, a', the charge will descend by its own gravity into the body of the furnace, without allowing the gases to escape through the charging aperture, a. The charge thus falls upon a layer of incandescent fuel, rising to a certain height above the tuyère, B. A layer of fuel is then poured upon the ore, then another charge of ore, and so on alternately, until the furnace is full; and it is to be replenished in the same manner, when the charge sinks below a certain depth, which can be easily ascertained by experience.

The zinc is volatilised by the heat, and the scoria falls into the lower part of the furnace, and is run out at the apertures, c, c', c''. The volatilised zinc is carried off with the gases arising from combustion, and passes through the opening, d, into the receiver, e, above. The gases from the fire-place escape through the openings, g, and, as these latter might carry off particles of zinc with them, they are passed through a hydraulic main, h, before being allowed to escape into the atmosphere. By this means all solid matters are retained, and the zinc, together with any dust or extraneous particles, is extracted through the openings, k. When the ore is to be operated upon in a comminuted state, it is advisable to make it up into a paste, together with the flux, by the addition of water, so that it may be charged in pieces of such size as not to pass through the fuel. Zinc ore is often mixed with sulphuret of lead, and by this mode of operation the zinc is obtained by volatilisation, and lead by fusion (this latter running to the bottom of the furnace below the scoria), if, by previous roasting, a portion of the sulphur has been driven off from the ore.

The second part of the invention consists in a novel construction of apparatus for the manufacture of oxide of zinc. Fig. 4 is a vertical section of the furnace, and of the chamber for the reception of the oxide of zinc; fig. 5 is a horizontal section of the furnace, taken in the line c, d, of fig. 1; and fig. 6 is a vertical section, taking in the line a, b, of fig. 1. A, A, are the retorts or subliming pots (of which there may be any convenient number), placed in the hole of the furnace; B, B, are the covers of the retorts which are perforated; C, is the door of the oxidizing chamber; F, upper fire, through which the gases and other products of combustion pass from the fire-place to the chimney; E, E, are vessels for receiving the zinc, in case of rupture of the retorts or pots, in which case the liquid metal would run down on the floor, a, a, and from thence into these vessels; L, is the flue or chimney of the furnace; m, n, fig. 6, are vertical



flues in the wall, for the passage of the waste gases of combustion; N, is a top partition, dividing the oxidising chamber, E, from the horizontal flue, F; M, M, is a chamber for receiving the oxide of zinc; O, a chimney for creating a draught, and thus drawing the oxide of zinc, together with air and gases, through the chamber, M, and alternately over and under the upper and lower partitions, P and Q. There may be any number of these partitions, according to the size of the apparatus, and the quantity of oxide to be manufactured: Q, is a wire-cloth, or other suitable sifting partition, at the end of the chamber, M, for retaining the oxide of zinc, and, at the same time, allowing the air and gases to pass through to the chimney, O. It will be seen that the furnace is divided into three separate chambers or compartments; the lower one, which may properly be called the furnace or heating-flue, contains the retorts, A, which are charged with the zinc to be operated upon. The volatilised zinc escapes through the orifices in the covers, B, of the retorts, and enters the middle or oxidising chamber, E. The zinc vapour is oxidised and forced through the chamber, M, either by means of a blower or by the draught created by the chimney, O, at the end of the chamber, M. The upper compartment, F, is nothing more than a narrow channel or flue, for the passage of the smoke and gases from the fire-place to the chimney, L. These gases heat the dome, N, and thus keep the oxidising chamber at a sufficiently high temperature to burn the zinc vapours with facility and rapidity. The partitions, P and Q, in the chamber, M, are for the purpose of checking the power of the current and facilitating the deposit of the oxide in the chamber, M, from whence it is withdrawn by means of openings at the sides.

The patentee, in conclusion, states that he is aware of oxide of zinc having been heretofore obtained by distillation, and bringing the volatilised metal into contact with atmospheric oxygen in an oxidising chamber; he does not, therefore, intend to claim, generally, producing oxide of zinc in this manner; but he claims, firstly—obtaining metallic zinc in the manner and by means of the apparatus above set forth and described, or any mere modification thereof. And, secondly—producing oxide of zinc by distilling the metal, or matters containing metal, in subliming pots or vessels, furnished with perforated covers, through which the volatilised metal may issue into an oxidising chamber, where it is met or brought into contact with the oxygen of the atmosphere, and becomes converted into oxide of zinc.

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PRICE OF COALS PER TON AT THE CLOSE OF THE MARKET.

**MONDAY.**—Carr's Hartley 15—East Adair's Main 13 6—Hasting's Hartley 13—Holywell Main 15—Ord's Redheugh 13—Townley 14—West Wyman 14 3—Wall's End Hedley 15—Hilda 14 6—Hedworth 13 6—South Killingworth 13 9—Belmont 17—Bradley's Hutton 17 3—Hutton 18—Hawwell 18 3—Lambton 17 0—Morrison 16 3—Benson 15 6—Caradoc 17 3—Cassop 16 9—Hough Hall 15 6—Seymour Tees 16—Cowpen Hartley 15—Ships at market, 16 5; sold, 2s.

**WEDNESDAY.**—Hasting's Hartley 15 6—Holywell Main 15 6—North Percy Hartley 15—Ord's Redheugh 13—Townley 14—Brancepeth Coke 23—Cowpen Hartley 16—Derwentwater Hartley 15—Wall's End Gosforth 15—Hilda 14 6—Horton 15—Killingworth 14 9—Belmont 17 3—Hutton 18—Hawwell 18 6—Jonasohills 14 9—Lambton 17 6—Russell's Hutton 17 6—Stewart's 18—Benson 15 6—Cassop 16 9—Hough Hall 15 9—South Kellow 15 3—Adelaide 16 3—Seymour Tees 16—South Durham 15 3—Ships 14 0; sold 50.

**FRIDAY.**—Carr's Hartley 15—Ord's Redheugh 13—Walker's Primrose 13 3—Wall's End Hedley and Co. 15 6—Framwellgate 16—Gosforth 16 6—Hedley 15 6—Hilda 15—Horton 16 3—Benson Main 17—Bradley's Hutton 17 3—Hutton 18—Hawwell 18 3—Jonasohills 14 9—Lambton 17 6—Russell's Hutton 17 6—Stewart's 18—Caradoc 17 3—Cassop 17—Thorley 17 3—Tees 17 9—Nixon's Merbury 21—Siddley's 15—Ships at market, 14 6; sold, 37.

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The advantages of this over all other iron bridges hitherto invented, consist in the small amount of iron required, compared with the strength obtained, in avoiding the use of any surplus weight of material, in the consequent economy of its construction, and also from its lightness, easy mode of putting together, and facility of transport, in its peculiar adaptation for foreign use.

As regards economy, it can be erected at a cost not exceeding that of a WOODEN BRIDGE, of equal capability.  
Applications to be made to Mr. Moniton, the patentee, Bradford, Wilts.

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MILLWALL, POPLAR

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Extract from the Appendix to the Second Report of the Commissioners on the Fine Arts.

"In 1839, I superintended the construction of a house, of three stories, on the Lac d'Engelheim. The foundation of the building is constantly in water, about 194 inches below the level of the ground floor. The entire horizontal surface of the external and internal walls was covered at the level of the internal ground floor with a layer of

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It is proposed to divide the 100,000 acres into 4000 lots of 25 acres, at 8s. per acre, or £10 per lot. It is also proposed to issue scrip certificates for each 25 acres, to be paid for in four equal instalments of 2s. per acre—the first on delivery of the scrip, the remaining with a rest of three months between each. At the last payment the scrip receipt will be exchanged for a certificate, registered in the Land Office of the State, which will entitle the holder to the possession in fee of the lot numbered and specified in such certificate. An agent on the lands will point out and place the holder of said certificate in possession.

The purchasers of the several lots will be entitled to the minerals or products which may be found on the property so secured—thus considerably enhancing the value to be attached thereto.

It is further proposed, that the agent at Charleston or Savannah shall advance the emigrant, on arrival at either port, by way of loan, on the deposit of his registered certificate, such sum as he may require (not exceeding 4s. per acre) to be repaid in twelve months, with interest at 5 per cent., or at such periods as may be agreed upon. This advance to be applied solely to defray expenses incurred in reaching his location, and to the purchase of necessary implements required for his use. Should default arise by non-payment of loan, or non-fulfilment of agreement, the land referred to in said certificate, with all and every improvement thereon, will become forfeited to the vendor, or his assigns, and to whom the purchaser or his assigns will be bound to render up peaceable possession, under a penalty of £20, recoverable in any court of justice in the State of Georgia. Immediate steps will be taken to re-survey and divide the land into allotments of 25 acres. The survey, it is hoped, will be completed within six months; but previous to which no general location can take place. Notice will be given in the newspapers of the receipt of the re-survey, and new maps of the different lots. To such parties as, in the meantime, choose to pay in full for their allotments, a discount of 5 per cent. per annum will be allowed.

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